Educational Studies No. 2

GEN. EDITOR: PROFESSOR S. B. ADAVAL.

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PERSONALITY STUDY OF

ENGINEERING, LAW, MEDICAL & TEACHER TRAINING STUDENTS

By

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BUREAU OF EDNL. & PSYL. RESEARCH : LIBRARY.

S.C.E.R.T., West Bengal
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Calcutta
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United Publishers
1, Katra Road, P. B. 66
Allahabad (India)

Published by
United Publishers
1, Katra Road, Allahabad-2.

(Binding)

Ednl. Psy. Research
DAVID HARE TRAINING COLLEGE
Dated 12-3-70
No. 2167

S.C.E.R.T., West Bengal
Date 12.3.70
Acc. No. 2167

137
PAL

First Edition: 1969

Thesis Approved for the Degree of DOCTOR OF PHILOSOPHY IN EDUCATION in the University of Allahabad and Publication Partly Assisted by The National Council of Educational Research and Training, New Delhi.

Deluxe Full cloth bound Price Rs. 39.00
Foreign Price Inclusive of Postage $ 8.00, 65 sh.

Printed at
St Paul's Press,
28-B, Chatham Lines,
Allahabad-2.

INTRODUCTION

Professional education covers the most vital area of social life as it prepares men and women for different types of professional services. During the last decade professional education in India has expanded appreciably and the number of professional institutions including engineering, medical and teacher training colleges has increased from 2339 in 1950-51 to over 4321 today. Large sums of money are being spent for training more and more professional workers. The number of admissions in each professional college has been stepped up. More buildings, equipment and teachers have been provided. Improvement in professional education in the country, however, cannot be judged merely on the basis of increase in the number of colleges, students, equipment and teachers. The real value of professional education must be sought in the success of a professional student as a specialist and as a man.

Problems of professional education have not attracted the desired attention of educational researchers in India. The need of research in this area from the educational standpoint is vital and urgent. Any scheme for improving professional education in the country will be unrealistic unless reliable studies are conducted covering different aspects of professional education, and their major findings given due recognition.

Surveys and studies conducted in Western countries in the field of professional education cover such aspects as history, admission requirements, selection procedures, objectives, cost of education, financial aid, curriculum content, teaching methods, faculty, internship, evaluation of achievement etc. There is considerable paucity of research attempting to discover the characteristics or qualities of professional students or to understand the effect of professional education on students attitudes and values.

The problem of predicting the success of students in some professional colleges is a relatively recent concern of teachers, administrators and research workers. Efforts in this direction are, however, confined almost entirely to determining the significance of academic and intellectual factors. The fact that non-intellectual factors such as motivation, emotional adjustment, interpersonal relationships play a very significant role in the success of professional students establishes the importance of conducting studies in this area. The present thesis throws valuable light on this neglected area of professional education.

While reviewing researches directly or indirectly related to the present study, one cannot help noting that greater attention has been given to personality of men in various occupations rather than the trainees. The most extensive studies of the personality of men in different occupations are those of Anne Roe (1956). Other noteworthy studies in this field are those of Bigelow (1940), Harrower (1942), Piotrowski (1944), Super (1944), Kellman (1946), Murray (1948), Guilford (1948), Rieger (1949), Morris (1950) and Steiner (1953). Research literature pertaining to the problem also points out that there is a dearth of comparative studies dealing with personality characteristics of students in important professions. The two early studies reported on the subject are those of Kaback (1946) and Blum (1947). These two studies and others mentioned above included a limited number of professions and covered some limited areas of the personality. The tools employed in majority of these studies included either questionnaires, rating scales or personality inventories. In some studies projective tests have also been used, but either the tests were administered as group tests or the number of cases was very small.

The present study, unlike other studies conducted in the West or in India, includes students preparing for four important professions namely engineering, law, medicine and teaching and tries to compare the personality characteristics of these four groups of professional students. It covers a much wider field and attempts to measure different areas of personality considered important for success in the professions. The four major areas of personality included in this study are: (1) Intellectual (2) Motivational (3) Emotional and (4) Social. A carefully selected battery of tests was used to measure and compare various characteristics of personality. This battery contained both personality inventories and projective tests, and these have mutually strengthened the results of each other.

A unique feature of the Dr. Pal's thesis is that it has tried to discover typical personality characteristics of students in the four groups. The results derived from the Study of Values, the Rorschach Test and the Thematic Apperception Test showed that the engineering, law, medical and teacher training students revealed distinguishing patterns of values, different personality structures and typical need patterns. Construction of the Rorschach Rating Scale and measurement of the five important characteristics namely: (1) Intellectual Level (2) Control (3) Creative Potential (4) Introversive-Extratensive Balance and (5) Level of Aspiration is a new feature of this study. The application of factor analysis revealed that these Rorschach variables in all the four groups are overlapping. The Introversive-Extratensive dimension, however, stood out distinctly as a separate variable. Eclectic approach in the analysis of TAT stories is also a new feature of this investigation.

Dr. Pal's study gives an insight into the personality patterns of students entering into four professions. Knowledge of such patterns can help the teachers, guidance workers and counsellors in giving educational and vocational guidance to adolescents more effectively. The study suggests that in the selection of professional students apart from academic competence due weightage needs to be given to personality factors having their roots in intellectual, motivational, emotional and social powers of the individual. The study also emphasises the importance of moulding the attitudes and values of students through organized activities and experiences. Besides providing valuable educational implications, the present study will provoke thought for further research in the field of professional education.

I am happy that we are able to publish Dr. Pal's thesis in the series *Educational Studies*. It is a significant contribution to research in this field in India, and it is hoped that it will find its due place among such works.

S. B. Adaval
GENERAL EDITOR

University of Allahabad,
Allahabad, India.

PREFACE

No truly comprehensive work has been done with personality tests as such in the field of Professional Education. Some studies published in recent years have given greater attention to established professional personnel and not to trainees. Also, the data for most of such studies have been based on rather limited objective testing of personality characteristics and have not employed comparable scaled measurements. The present investigation attempts to find out and compare the personality characteristics of students preparing for four important professions namely Engineering, Law, Medicine and Teaching under Indian conditions. It covers a much wider field and employs both personality inventories and projective tests for the collection of data. The present study also tries to discover distinguishing personality characteristics of students in the four professions under study, and offer suggestions regarding these characteristics for vocational planning of students.

The present study, it must be admitted, due to paucity of time and resources, does not cover the whole ground. But the results are suggestive and it is hoped that they will stimulate more elaborate investigations in the field of Occupational Psychology, which will be of practical help in vocational guidance and selection.

The investigator welcomes this opportunity to express his deepest gratitude to Dr. S. B. Adaval, Professor and Head, Department of Education, University of Allahabad, Allahabad, for his able guidance, valuable criticisms and encouragement throughout the progress of this investigation. The writer is grateful to Dr. Shib K. Mitra, Head of the Department of Psychological Foundations, National Council of Educational Research and Training, Delhi, and Dr. A. Edwin Harper, Jr., Director, Bureau of Educational Research, Allahabad for their valuable advice on the use of statistical techniques. The writer wishes to offer his sincere thanks to Shri V.N. Tripathi, Research Scholar, Department of Mathematics, Allahabad University, Allahabad for checking the statistical calculations. The writer is highly indebted to Shri P.N. Chatterji, Department of Education, Allahabad University, Allahabad, for going through the manuscript and enlightening him with valuable suggestions. The writer also wishes to thank all the principals, teachers and students who have helped in completing the field work.

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CHAPTER I

INTRODUCTION

Occupational Categories

The world of work is vast as well as complex. The Dictionary of Occupational Titles[1] (DOT), which is intended to be a comprehensive listing of all distinguishable kinds of socially acceptable, remunerative work in the United States of America, contains descriptions of 22,028 distinct occupations. This array is obviously too complex to be generally intelligible. A part of the solution is to group these occupations under more general categories. Many possible ways of grouping occupations for purposes of classification have been suggested. The classification of occupations according to earnings, skill levels, prestige, education, intelligence, interests, location of work etc., have been attempted by a number of psychologists and sociologists. The most common classification is the field and level classification in which the occupations are grouped according to the field of activity as well as skill levels. The Dictionary of Occupational Titles incorporates what is perhaps the best known field and level classification of occupations. The occupational categories are: (1) Professional and managerial occupations (2) Clerical and sales occupations (3) Service occupations (4) Agricultural, fishery, forestry occupations (5) Skilled occupations (6) Semi-skilled occupations and (7) Unskilled occupations.

In India, the Ministry of Labour and Employment has prepared a National Classification of Occupations.[2] 3,000 occupations have been classified into 11 occupational divisions, 75 occupational groups and 331 occupational families. The occupational divisions with their code numbers are as follows:

'0'	Professional, technical and related workers
'1'	Administrative, executive and managerial workers
'2'	Clerical and related workers
'3'	Sales workers
'4'	Farmers, fishermen, hunters, loggers and related workers
'5'	Miners, quarrymen and related workers
'6'	Workers in transport and communication occupations
'7-8'	Craftsmen, production process workers and labourers not elsewhere classified
'9'	Service, sport and recreation workers
'x'	Workers not classifiable by occupations

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[1] United States Department of Labor, *Dictionary of Occupational Titles*, Parts I, II, IV, Washington: Government Printing Office, 1949.

[2] Government of India Ministry of Labour and Employment, *National Classification of Occupations*, Occupational Information Unit, Directorate General of Resettlement and Employment, Delhi, 1959.

The Nature of Professional Service

Professional service is obviously a limited segment of the world of work. According to Blauch, in 1950 in the United States of America 6.5 percent of the work force were in professional occupations.[1] The number of applicants on the live register of the Employment Exchanges in India at the end of 1965 for the professional, technical and related workers was 1,22,565 which is 4.7 percent of the total enrolment.[2]

Professional service, however, is a very important and special kind of service rendered by those who possess special knowledge and special skills. When this knowledge and this skill are of a certain standard, society calls the services resulting therefrom 'professional'. According to Carr-Saunders and Wilson "The application of an intellectual technique to the ordinary business of life, acquired as the result of prolonged and specialised training, is the chief distinguishing characteristic of the profession".[3] Tyler found the two essential characteristics of a true profession to be: (1) the existence of a generally recognised code of ethics supported by group discipline and (2) the basing of technical operations on general principles, rather than rules-of-thumb or routine skills.[4] Blauch pointed out three important features of the profession: i) specialised skills requiring long study and training, ii) success measured by the quality of service rendered rather than by any financial standard and iii) the organization of a professional association to maintain and improve service and also to enforce a code of ethics.[5]

Probably the best description of the term profession has been given by Flexner. He set forth six criteria for distinguishing professions from other kinds of work. In his view professional activity was: "(1) basically *intellectual*, carrying with it great personal responsibility (2) it was *learned*, being based on great knowledge and not merely routine (3) it was *practical* rather than academic or theoretical (4) its *technique* could be taught, this being the basis of professional education (5) it was strongly *organised* internally and (6) it was motivated by *altruism*, the professionals viewing themselves as working for some aspect of the good of society".[6] Applying these criteria to classify various occupations Flexner found that medicine, law, engineering, teaching, painting, music etc., were definitely professions but that plumbing, banking, and social work were not professions. However, we find, that in order to increase their autonomy and raise their prestige many occupations are trying hard to become professions. To show this difference Carr-

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[1] Lloyd E. Blauch, *Education for the Professions*, United States Office of Education Publications, Washington: Government Printing Office, 1955, p. 4.

[2] Government of India Ministry of Information and Broadcasting, *India* 1966: *A Reference Manual*, Publication Division, Delhi, 1966, p. 152.

[3] A.M. Carr-Saunders and P.A. Wilson, *The Professions*, Oxford: Clarendon Press, 1933, p. 491.

[4] Ralph W. Tyler, "Distinctive Attributes of Education for the Professions", *Social Work Journal*, 1952, 23, 52-62.

[5] Blauch, *Education for the Professions*, *op. cit.*, pp. 1-8.

[6] Abraham Flexner, "Is Social Work a Profession?" In *Proceedings of the National Conference of Charities and Correction*, Chicago: Hildmann Printing Co., 1915, pp. 578-581.

Saunders made a distinction between professions, new professions, near professions, and would-be-professions.[1]

Prestige of Occupations

Engineering, medicine, law and teaching are considered to be four important professions which occupy an esteemed position in the society. They command great amount of prestige and have great appeal or attractiveness for the aspiring youth. A number of studies have shown that these professions have been held in high esteem. In a study on Prestige of Occupations in India, Cook investigated rank order of prestige of 22 selected occupations. The rank order of engineer was 1, of doctor 2, of secondary school teacher 5, and of lawyer 6. The following Table[2] shows the comparative rank order of occupations as found in four different studies:

Rank Order of Occupations by various Prestige Ratings

Occupation	Count's Study 1925	Deeg & Paterson's Study 1947	Krishnan's Study 1956	Cook's Study 1962
Engineer-Civil Engineer	5	5	4	1
Doctor-Physician	2	1	1	2
Military Officer-Army Captain	6	6	5	3
School Principal-D.E.O.	4	4	7	4
Sec. School Teacher-Ele. School Teacher	7	7	8	5
Lawyer	3	2.5	3	6
Businessman-Banker	1	2.5	9	7
Farmer	8	9	2	8
Factory Worker-Machinist	9	8	6	9
Shopkeeper-Grocer	10	10	13	10
Driver-Motorman	13	13	12	11
Postman	11	11	11	12
Carpenter	12	12	10	13
Household servant-Janitor	15	15	14	14
Barber	14	14	15	15

Professional Education in India

Professional education according to Blauch consists of those forms of education that prepare men and women for practice of the professions.[1] For a number of years our country has been faced with the problem of educating a sufficient number of professional workers. In the post-independence period a large scale expansion and development has taken place in professional education. The following table indicates this development:

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[1] A.M. Carr-Saunders, "Metropolitan Conditions and Traditional Professional Relationships", In *The Metropolis in Modern Life*, edited by R.M. Fisher, Garden City: Double Day & Co., 1955, p. 281.

[2] David R. Cook, "Prestige of Occupations in India", *Psychological Studies*, 1962, 7, No. 2. p. 35

Growth of Professional Colleges[2]

Type of College	1949-50		1958-59	
	Institutions (College Standard)	Enrolment (College Standard)	Institutions (College Standard)	Enrolment (College Standard)
Engineering	23	10,906	55	31,767
Medicine	35	12,835	109	32,840
Teacher-Training	48	4,761	213	24,428
Law	20	10,633	32	24,055

The table shows that expansion in the field of medicine and teacher training has been outstanding.

Delivering the Convocation Address to the M.S. University, Baroda on November 27, 1965 Prof. M.S. Thaker, Member of the Planning Commission said that the highest priority should be given to the development of human resources i.e., training of scientists, technologists, engineers, technicians, craftsmen and a host of professional and semi-professional workers.[3] Late Prime Minister Lal Bahadur Shastri also stressed the need of promoting technical education for the rapid industrialisation of the country. "We need engineers, mechanical, civil and electrical more than the raw material for the effective implementation of our development plans", he said. It is true that the help of technical personnel might be obtained from other advanced countries, but Shri Shastri said, this help might be available only for a short time.

By the end of 1965, said Shri Shastri, the country would have 2,23,000 engineers, both degree and diploma holders. But this number would even then be inadequate considering the requirements of the country. The outturn of engineering graduates and diploma holders per 100,000 of population was only 4 in India, as compared with 15 in U.K., 25 in Germany and 33 in Austria. It was expected that by 1970 there would be about 4,32,000 engineers. It was, therefore, necessary that great emphasis should be laid on the promotion of technical education, and more and more institutions should be established for the training of fresh engineers.[4]

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[1] Lloyd E. Blauch, "Professional Education" in *Encyclopedia of Educational Research*, edited by Chester W. Harris, Third Edition, New York: The Macmillan Company, 1960, p. 1056.

[2] National Council of Educational Research and Training, Ministry of Education, *First Year Book of Education: Review of Education in India* 1947-1961, New Delhi, 1961, p. 861.

[3] The Hindustan Times (New Delhi), November 29, 1965, p. 4.

[4] Northern India Patrika (Allahabad), April 19, 1965, p. 4.

The need for more facilities for medical education was recognised in the First Five Year Plan and the Planning Commission recommended the establishment of more medical Colleges so as to increase the number of annual admission in medical Colleges to 4,000 by the end of first plan period. By the end of Second Five Year Plan period the number of admission rose to 6,979 in 1961 as against 1,983 in 1947.[1] It was planned to establish 15 new medical colleges during the Third Five Year Plan Period. It is also proposed to open 30 new medical colleges of modern medicine during the Fourth Five Year Plan, including 5 regional medical Colleges.[2]

According to Prof. S.N. Mukerji one of the main problems facing the country at present is to provide an adequate number of qualified teachers during the Fourth Five Year Plan. During 1966-71, the country will need forty-five to fifty thousand more secondary school teachers to serve the additional enrolment in secondary school population expected during these years. Requirements of this order will necessitate a huge expansion in training facilities of the teachers at the secondary stage.[3]

But the appraisal of achievement of professional education in the country cannot be made merely on the basis of number of buildings, equipments, colleges, teachers and students. Qualitative appraisal in the form of development of certain professional attitudes and qualities should be considered an important aspect of the training. According to Brickman "the appraisal of professional education cannot be founded on paper programmes alone, or even on the actual work of instruction. The true value of the professional must be sought in his performance as a specialist and as a man."[4]

These days there is a great rush for admission to many professional colleges, at least in good institutions. The students are admitted on the basis of selection tests and only those are admitted who are intellectually superior and have good academic record. The teaching and law institutions, however, are often an exception to this general rule, as in some of them selection is made not on the basis of test. Regarding the quality of future teachers Prof. Mujib says that "the intellectual equipment of people from amongst whom future educationists and educators will be drawn is not only below the average but is so low that it should give cause for serious thought, if not alarm.[5] Similarly legal profession does not attract very good students. The present investigator's interview with many law students revealed that majority of the good students who had offered law were preparing for competitive examinations and had no intention of joining the profession.

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[1] Government of India Ministry of Education, Publication No. 654, *Educational Activities of the Government of India*, Delhi, 1963, p. 222.

[2] Northern India Patrika (Allahabad), December, 9, 1965, p. 3.

[3] S.N. Mukerji, "Teacher Education and Fourth Five Year Plan", *Educational and Psychological Review*, 1964, 4, 117-118.

[4] William W. Brickman, "Professional Education outside the U.S.A. " In *Education for the Professions* edited by Nelson B. Henry, The sixty-first Year-Book of NSSE, 1962, p. 100.

[5] A. Mujib, "Education as a University Discipline: Prof. Mujib replies", *The Journal of University Education*, 1964, 3, No. 1, p. 66.

Personality and Professional Education

Inspite of this selective admission there are still failures, dropouts and huge wastage. The high incidence of student wastage in engineering colleges and institutions has been brought to light by the Institute of Applied Manpower Research in a recent study. The study reveals that the rate of wastage is 15.6 percent in the case of first degree institutions where the duration of the course is four years and 19.3 percent in the five year degree course.[1] In view of the high cost involved in the training of professional students, specially engineering and medicine, failures and wastage are matters of vital concern to the society.

The problem of predicting student success in some of the professional schools is a relatively recent concern of research workers. To do it successfully, work will have to be done along many lines. The recent efforts in this direction, however, are confined almost entirely to determining the significance of intellectual and academic factors. One often wonders if success in these courses and in the profession itself is solely dependent on individual's intellectual qualities and academic attainments. Referring to the problem of dropouts in engineering school, Thresher says, "It is significant, however, that students who drop out either through formal disqualification or other reasons, do not lack in intellectual ability, nor do most of them lack adequate preparation. Their trouble stems rather from emotional problems which result in poor motivation".[2] An investigation by Sinha and Misra also shows that after the assessment of minimal academic competence, a good selection procedure for entrants into an engineering institution should put stress on the non-academic and personality traits of the individuals.[3] Similarly Waggoner and Zeigler found that the failing students in a medical school showed indications of immaturity and severe tension.[4] Shrimali reported that there is a considerable maladjustment among pupil-teachers which adversely affects their professional work.[5] All these suggest that motivation, emotional adjustment, interpersonal relations and such other personality factors play a significant part in the success of entrants in professional institutions. An important need in professional education, therefore, is for systematic research into the personality characteristics of students preparing for different professions. The present study was undertaken with the object of increasing our knowledge of the personality characteristics which mark the students in the four types of professional institutions which have been studied.

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[1] Institute of Applied Manpower, Research, *Manpower Group Survey (Engineering)*, IAMR Working Paper No. 13/1965, Indraprastha Estate, Ring Road, New Delhi, September 1965, p. 11-12.

[2] R.A. Thresher, "The Problems of College Admissions", *Massachusetts Institute of Technology Review*, 1959.

[3] Durganand Sinha and Hemkant Misra, "Qualities Desirable for Engineering Students and Profession: Students Sample", *Journal of Psychological Researches*, 1961, 5, 53-63.

[4] R.W. Waggoner and T.W. Zeigler, "Psychiatric Factors in Medical Students Who Fail", *American Journal of Psychiatry*, 1946, 103, 369-376.

[5] P.L. Shrimali, "A Study of Adjustment Problems of Pupil-Teachers", *Journal of Education and Psychology*, 1952, 9, 19-23.

Objectives of the Present Study

The main objectives of the present study are:

1. To compare some pertinent personality characteristics of students preparing for the professions of engineering, law, medicine and teaching.

2. To determine whether there are any significant differences in the major personality dimensions between these four groups.

3. To find out distinguishing personality characteristics of students in these four professions, and

4. To offer suggestions regarding the utility of these distinguishing characteristics for educational and vocational planning of students.

Scope of the Study

The scope of this study has been limited by the following considerations:

1. The study is limited to students preparing for only four professions namely engineering, law, medicine and teaching. These professions have been selected because they exhibit some variety, i.e., one is based on the physical sciences, one on the biological sciences and two are based on the social sciences. They also command high prestige and have great appeal or attractiveness for the aspiring youth.

2. The study is confined to students preparing for the first professional degree that is to say Bachelor in Engineering (B.E.), Bachelor in Law (LL.B.), Bachelor in Medicine and Surgery (M.B.B.S.) and Bachelor in Teaching (B.T.).[1] These students were selected because they are all preparing for the first professional degree which entitles them to enter upon the different professions. Moreover, these students were more readily available for testing than either post-graduate students or men in different professions.

3. The study attempts to make a comparative study of the personality characteristics considered important for success in the professions. It does not aim at clinical or diagnostic analysis of personality. The following areas of personality have been covered in the present study:

I. Intellectual

(1) Intellectual Level (2) Creative Potential

(3) Power of Organization (4) Imagination

(5) Linguistic Ability.

II. Motivational

(6) Values (7) Level of Aspiration (8) Needs

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[1] In the present study students for Bachelor in Teaching were from a L.T. College. In this city all training institutions prepare students for the L.T. Diploma which is equivalent to B.T.

III. **Emotional**

(9) Adjustment (10) Control (11) Introversive-Extratensive Balance

IV. **Social**

(12) Inter-personal Relationships

Hypotheses

The following Null Hypotheses were set up for testing:

Intellectual

(1) There is no difference in Intellectual Level between engineering students, law students, medical students and student-teachers.
(2) The Creative Potentials of students preparing for four professions under consideration do not differ from one another.
(3) These groups do not vary from one another in their Power of Organisation.
(4) There is no difference in Imagination between engineering students, law students, medical students and student-teachers.
(5) The Linguistic Abilities of these four groups do not differ from one another.

Motivational

(6) The Values of these four groups under consideration do not differ from one another.
(7) These groups do not vary from one another in their Levels of Aspiration.
(8) There is no difference in Needs between these four groups of professional students.

Emotional

(9) These four groups under consideration show no difference between themselves in their Adjustments.
(10) Engineering students, law students, medical students and student-teachers do not vary from one another in their Controls.
(11) There is no difference in Introversive-Extratensive balance between these four groups under consideration.

Social

(12) The four groups of professional students under consideration do not vary from one another in their Inter-personal relationships.

The testing of hypotheses was accomplished by comparing the performance of the four groups on four tests as given below:

Hypothesis (6)—Allport-Vernon-Lindzey Study of Values
Hypothesis (9)—Saxena's Adjustment Inventory
Hypotheses (1), (2), (7), (10) and (11)—Rorschach Ink Blot Test
Hypotheses (3), (4), (5), (8) and (12)—Thematic Apperception Test.

Before describing other details of the present study it seems desirable to discuss briefly the definition of personality.

Definition of Personality

Writing on Personality Super aptly remarked that "the field of personality is one of the most popular, challenging, important and confused in contemporary psychology".[1] One obstacle to the measurement of personality is that there is absence of agreement about a definition of personality. Psychologists have defined personality in a variety of ways emphasizing one aspect or another in their definitions and this has created good deal of confusion. Considering this difficulty Hall and Lindzey have provided a very general definition of personality: "Personality consists concretely of a set of values or descriptive terms which are used to describe the individual being studied according to the variables or dimensions which occupy a central position within the particular theory utilized".[2] In an attempt to find out an operational definition of personality for this study a few definitions will be considered below:

Some definitions look at personality from the standpoint of individual in question emphasizing his unique qualities or characteristics. Vernon says, "We mean by personality, simply, what sort of a person is so-and-so, what is he like?" He further adds "while a man's intelligence, his bodily strength and skills are certainly parts of his personality, yet the term refers chiefly to his emotional and social qualities, together with his drives, sentiments and interests".[3] Stagner is more concerned with the inner system of thought process of an individual and defines personality as "an inner system of beliefs, expectancies, desires and values".[4]

Cattell equated personality to the individual aspects of behaviour, focussed his attention to all the behaviour of the individual and viewed that it should have a predictive power. His definition runs as follows: "Personality is that which permits a prediction of what a person will do in a given situation. The goal of psychological research in personality is thus to establish laws about what different people will do in all kinds of social and general environmental situation...Personality is concerned with all the behaviour of the individual, both overt and under the skin".[5]

Lewin, Murphy and Murray gave explicit attention to the field within which behaviour occurs. Explaining his basic formula B=f (PE) Lewin says "to understand or predict psychological behaviour (B) one has to determine for every kind of psychological event the momentary whole situation, that is, the momentary structure and the state of the person (P) and the psychological environment (E)".[1] The Bio-social approach of Murphy covers a new field in personality theory. Murphy emphasized the importance of studying "the full reciprocity of inner and outer events." He held that life process is itself a matter of world as much as organism and that it is the interaction of the two, organism and the environment, that is available for study. According to Murphy "A personality is a structured organism environment field, each aspect of which stands in dynamic relation to each other aspect. There is organization within the organism and organization within the environment, but it is the cross organization of the two that is investigated in personality research".[2]

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[1] Donald E.Super, *Appraising Vocational Fitness*, New York: Harper & Brothers, 1949, p. 481.

[2] Calvin S. Hall and Gardner Lindzey, *Theories of Personality*, New York: John Wiley and Sons Inc., 1964, p. 9.

[3] Philip E. Vernon, *Personality Tests and Assessments*, London: Methuen & Co., Ltd., 1957, p. 2.

[4] Ross Stagner, *Psychology of Personality*, International Student Edition, Tokyo: Kogakusha Company Ltd., 1961, p. 3.

[5] R.B. Cattell, *Personlity: A Systematic, Theoretical and Factual Study*, New York: McGraw Hill Book Company Inc., 1950, pp. 2-3.

Murray's views on the structure of personality have been heavily influenced by psychoanalytic theory. The concept that is most closely associated with Murray's name is "need" and in most of his practical experimental work he has focussed his attention on this concept. Murray says that "the term personality has been reserved for the hypothetical structure of the mind, the consistent establishments and processes of which are manifested over and over again in the internal and external proceedings which constitute a person's life. Thus personality is not a series of biographical facts but something more general and enduring that is inferred from the facts".[3]

Eysenck defined personality "as more or less stable and enduring organization of a person's character, temperament, intellect and physique, which determines his unique adjustment to the environment".[4] Eysenck's view of personality appears to be particularly congruent with Allport's definition which will follow. Eysenck stresses the concept of organisation and also of adjustment of the individual to the environment.

Allport made an extensive survey of the literature, extracted about fifty different definitions, classified them into a number of broad categories and finally formulated his own definition. According to Allport "Personality is the dynamic organization within the individual of those psycho-physical systems that determines his unique adjustment to his environment".[5]

For the purpose of this study Allport's definition has been accepted as a working definition of personality. This definition is comprehensive, eclectic, functional as well as wholistic. It is most thoroughgoing in its stress upon the importance of giving a full consideration to individuality. It also seems to be more appropriate because:

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[1] Kurt Lewin, *A Dynamic Theory of Personality*, New York: McGraw Hill Book Company Inc., 1935 p. 79.

[2] Gardner Murphy, *Personality A Bio-social Approach to Origins and Structure*, New York,: Harper and Brothers, 1947, p. 8.

[3] H.A. Murray and C. Kluckhohn, "Outline of a Conception of Personality," In C. Kluckhohn, H.A. Murray and D. Schneider (Eds.) *Personality in Nature, Society and Culture*, New York: Knopf. 1953, p. 30.

[4] H.J. Eysenck, *The Structure of Human Personality*, London: Methuen & Co. Ltd., 1953, p. 2.

[5] G.W. Allport, *Personality: A Psychological Interpretation*, London: Constable & Company Ltd., 1937, Reprinted 1956, p. 48.

1. It recognizes the dynamic nature of personality.
2. It emphasizes the integration of inner psychophysical system and supports that this integration is unique in each individual.
3. It takes into consideration the adjustment of the individual to his environment.
4. It provides basis for the social stimulus value of personality.
5. It stresses both analytical as well as synthetic point of view.
6. It also provides a useful basis for making generalizations regarding groups of individuals with common characteristics and thus helps in making group comparisons.

CHAPTER II

REVIEW OF THE RELATED RESEARCHES

A review of research literature pertaining to the problem revealed that comparative studies of personality characteristics of students in important professions have not been thoroughly explored. As far as is known to the investigator, this is the first comprehensive study that compares important personality characteristics of students preparing for four different professions, namely, engineering, law, medicine and teaching.

Some comparative studies published in recent years have given greater attention to established professional personnel and not to trainees. A number of investigations have also been undertaken to find out the personality characteristics of students in separate professions. But such studies have been based on measurement of a very limited area of personality and have not employed tools which reveal the deeper aspects of personality.

The existing researches that are directly and indirectly related to the present study, may be conveniently classified under three broad categories: (1) Comparative studies: Different occupational groups (2) Comparative studies: Students in different professions and (3) Studies dealing with personality characteristics of students in four professions separately: (a) Engineering (b) Law (c) Medicine and (d) Teaching. These studies will now be reviewed briefly in chronological order.

1. Comparative studies: Different occupational groups

These researches are not directly related to the present work, because they deal with men in different occupations and not with trainees or students. However, a very brief review of these studies would place the present investigation in its proper perspective.

In an early study, in which professional teachers rated a list of traits such as truthfulness, patience, honesty, originality, leadership, etc., Dashiell[1] (1930) found little differentiation among the professions of law, medicine, commerce, teaching and engineering. Harrower and Cox[2] (1942) using the group Rorschach method, noted some statistically significant differences between small groups of metallurgists, commercial artists, engineers, social workers, clergyman and insurance salesmen. Many of these differences were related to intellectual level.

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[1] J. F. Dashiell, "Personality Traits and Different Professions", *Journal of Applied Psychology*, 1930, 14, 197-201.

[2] G. J. Harrower and K.J. Cox, "The results obtained from a number of Occupational Groupings on the Professional level with Rorschach Group Method", *Bulletin of the Canadian Psychological Association*, 1942, 2. 31-33.

Reiger's[1] (1949) study of several occupational groups such as engineers, supervisors and foremen, administrators, clerical workers, technical salesmen (N's 24 to 64) by means of individual Rorschach test showed a few statistically significant differences between groups. The important result was the distinction found between those who deal with verbal concepts and those who work with their hands.

Steiner[2] (1953) gave the Rorschach to female clerks, engineers, sales engineers, supervisors, copy writers and artists (N's 10 to 57). All the groups, except the female clerks, were characterised in common by high W percent suggesting superior intelligence. The successful clerks gave higher percentage of detailed responses and the artists gave very productive records with many human movement responses.

Probably the most extensive studies of the personality of men in various occupations are those of Roe[3] (1956). She conducted a large number of studies involving many occupational groups such as scientists, technicians, artists, biologists, psychologists, anthropologists, physical scientists etc. All groups were given some other tests in addition to Rorschach. Though there was a wide range of personality in each group, some differences among groups were found and many groups showed certain definite characteristics of personality structure. All scientific occupations seemed to have in common superior level of intelligence, lack of aggression, inadequacy in social relationships with delayed hetrosexual development.

Cattell, Day and Meeland[4] (1956) presented profiles on the 16 Personality Factor Questionnaire for eleven occupational groups such as airmen, athletes, clerks, executives, nurses, priests, salesmen, teachers. Although the difference between one occupation and another on any single personality factor was not often found highly significant, the difference on the total profile pattern on many occupations was found to be significant.

In a recent investigation Gray[5] (1963) studied the needs and occupational values of secondary teachers, accountants and mechanical engineers. The Edwards Personal Preference Schedule (EPPS) and the Miller Occupational Values Indicator (OVI) were administered to fifty subjects in each group. The EPPS yielded significant differences when secondary teachers and accountants and teachers and mechanical engineers were compared. No significant need differences were found between mechanical engineers and accountants. Occupational values as measured by OVI yielded significant differences between all three groups.

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[1] Audrey F. Reiger, "The Rorschach Test and Occupational Personalities", *Journal of Applied Psychology*, 1949, 33, 572-578.

[2] Matilda E. Steiner "The Search for Occupational Personalities: The Rorschach Test in Industry", *Personnel*, 1953, 29, 335-343.

[3] Anne Roe, *The Psychology of Occupations*, New York: John Wiley & Sons, Inc., 1956, Chapters 13 to 20.

[4] R.B. Cattell, M. Day and T. Meeland, "Occupational Profiles on the 16 Personality Factor Questionnaire", *Occupational Psychology*, 1956, 30, p. 10.

[5] James T. Gray, "Needs and Values in Three Occupations", *Personnel and Guidance Journal*, 1963, 42, No. 3, 238-244.

In another comparative study Gratton[1] (1964) administered the EPPS to secondary school principals, teachers and counsellors and found that each group had different need structures. Counsellors differed significantly from principals and teachers in their need for exhibition, affiliation and intraception. Teachers differed significantly from principals and counsellors in their need for succorance and nurturance. Principals differed significantly from teachers and counsellors in their need for achievement, endurance and aggression.

The most recent study in this field is that of Thumin[2] (1965). Minnesota Multiphasic Personality Inventory (MMPI) results of 54 advertising men and 44 engineers were compared. The findings revealed both common and specific personality characteristics among the occupational groups. The two groups differed significantly on seven of the scales. Advertising men showed uncommon freedom of expression, strong aesthetic interests, greater sociability and desire for social contact.

2. Comparative Studies: Students in Different Professions

A very limited amount of comparative studies have been undertaken on students preparing for different professions. Kaback[3] (1946) studied pharmacists and accountants and students preparing for these professions with the group Rorschach method. Significant differences on some 24 Rorschach variables were found between pharmacists and accountants. Students also differed from those engaged in the profession on a number of components. The largest differences were noted on the components indicative of intelligence. Pharmacists, as a group, were found to be adults of superior intelligence with marked intellectual flexibility. They had generally good control of impulses and they fell within the normal range of general adjustment. They, however, showed considerable anxiety. Accountants were also found to be a generally well adjusted group, having superior level of intelligence and good control of impulses. They had good mental elasticity, strong reliance upon inner stability, rationality and wide interests. However, Kaback's study failed to show a clearcut personality type either for the students preparing for one profession or the other or for those engaged in the profession.

A comparative study of students preparing for five selected professions namely mechanical engineering, education, law, medicine and journalism was made by Blum[4] (1947). He employed a questionnaire, the MMPI and the Strong Vocational Interest Blank. These groups were found to differ significantly on many scales and showed definite interest patterns. Mechanical engineering students scored highest of all groups on the hysteria and social introversion scales and lowest on the schizophrenia scale. This suggests good contact with reality and a preference for things and ideas rather than association with people.

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[1] Kemp C. Gratton, "A Comparative Study of the Need Structures of Administrators, Teachers and Counselors", *The Journal of Educational Research*, 1964, 57, 425-427.

[2] Frederick J. Thumin, "Personality Characteristics of Diverse Occupational Groups", *Personnel and Guidance Journal*, 1965, 43, No. 5, 468-470.

[3] Goldie Ruth Kaback, *Vocational Personalities*, Teachers College Contribution to Education No. 924, Columbia University Press, New York, 1946.

[4] L.P. Blum, "A Comparative Study of Students Preparing for Five Selected Professions including Teaching", *Journal of Experimental Education*, 1947, 16, 31-65.

3. Studies dealing with Personality Characteristics of Students in Four Professions

(a) ENGINEERING

In a prognostic study of engineering aptitude Holcomb and Laslett[1] (1932) noted that there was a decided tendency for ascendent student, as measured by the Allport Scale, to make low grades in engineering. Goodman[2] (1942) compared the engineering and liberal arts students on the Bernreuter Personality Inventory and reported that engineering students are more stable and self sufficient than liberal arts students.

Karn[3] (1952) investigated differences in values among various specialities in engineering students. Using Allport-Vernon Study of Values he found reliable differences among the groups of civil, metallurgical, electrical, chemical and mechanical engineers for all values except theoretical and social. Mechanical and metallurgical engineers deviated positively on the economic scale. Electrical engineers deviated negatively and significantly from all other groups on political value. Generally metallurgical engineers were the most deviant group and chemical engineers the least.

Burgess[4] (1953) studied over and under achievers in the engineering curriculum. She used Rorschach, MMPI, TAT, Rosenzweig Picture Frustration Test and Bernreuter Personality Inventory. She found that the Rorschach variables did not discriminate significantly between the two groups, although a few signs were significant on a few cards. On the TAT over achievers scored significantly higher on achievement, aggression, status and self improvement needs. Under achievers scored significantly higher on dependency needs and needs to be free of restraint. No significant differences were noted when Rosenzweig, MMPI or Bernreuter tests were employed. As a group over achievers were found to be more intellectually adaptive, less labile, more constricted and inhibited, more cautious and realistic in approach to problems and having greater need for achievement and self improvement.

Misra[5] (1962) conducted a study upon sixty high and low achieving engineering students at the Indian Institute of Technology, Kharagpur. The main object of his study was to find out whether and to what extent the non-intellectual and personality factors enabled one to discriminate between the high and low achievers in engineering education. Ten scores based on eight psychological tests were compared. Only three of these ten scores showed a difference between the two groups. Two striking features of the analysis of discrimination were: (1) Intelligence test scores did not discriminate the high and low achievers in engineering whereas (2) the scores on Neurosis, Emotional balance and Anxiety did discriminate them. In the light of these two facts, it was recommended that, after the assessment of the intellectual requirements, a segregation of entrants into an engineering institution, should be based upon the relevant non-academic and personality traits in the individual and suitable steps should be taken to facilitate their proper development.

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[1] G.W. Holcomb and H.R. Leslett, "A Prognostic Study of Engineering Aptitude', *Journal of Applied Psychology*, 1932, 16, 107-115.

[2] C.H. Goodman, "Ability Patterns of Engineers and Success in Engineering School", *Michigan University, Ann Arbor. Microfilm*, 1942.

[3] H.W. Karn, "Differences in Values among Engineering Students", *Educational and Psychological Measurement*, 1952, 12, 701-706.

[4] Elva Burgess, *Personality Factors in Over and Under Achievers in Engineering*, Pennsylvania State University, Abstract of Dissertation, 1953, 16, 536-543.

[5] Choudhury Hemkant Misra, *Personality Patterns of the High and Low Achievers in Engineering Education*, Unpublished Doctoral Thesis, Indian Institute of Technology, Kharagpur, 1962.

In a recent study conducted in India Sinha and Misra[1] (1963) investigated the qualities rated for relevance to success in engineering education and profession in 40 teachers and 30 students of engineering. A list of forty-five qualities was rated on an eight point scale. The list included such qualities as curiosity, originality, imagination, high intelligence, interest in people, emotional balance, good leadership etc. It was observed that the teachers and students in general rated "personality" and "academic" types of traits as equally relevant to success, whereas the "interest" and "sociability" types were rated considerably lower. Ratings for relevance to success in students differed significantly in the students' and teachers' samples on four traits only viz., interest in people, interest in fundamental philosophical questions, quickness in decision and neatness in recording observation. Teachers seemed to emphasize the importance of all the above traits more than the students, except quickness in decision, where more teachers viewed it as less relevant to success in engineering education.

(b) LAW

The author came across only one study dealing with personality characteristics of the students preparing for the profession of law. Eron and Redmount[2] (1957) compared two professional groups law and medicine on three traits. The three characteristics are named general anxiety, cynicism (continuous disbelief in man's sincerity and motives) and humanitarianism (a regard for the interests of mankind). The law students scored considerably higher than the medical group on the scale measuring anxiety. On the cynicism scale, the difference was even greater, with the law group again significantly higher. On the third, humanitarianism, scores of Freshmen in law and medicine had almost the same mean and standard deviation.

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[1] Durganand Sinha and Hemkant Misra, "Qualities Desirable for Engineering Students and Profession, Part III, Comparison of the Teachers' and Students' Samples" *Journal of Psychological Researches*, 1963, 7, No. 1, 16-20.

[2] Leonard D. Eron and Robert S. Redmount, "The Effect of Legal Education on Attitudes", *Journal of Legal Education*, 1957, 9, 431-443.

(c) MEDICINE

Waggoner and Zeigler[1] (1946) noted that one of the important causes of failure at the University of Michigan Medical School was maladjustment. Some of the students were found to have failed not because they were intellectually inferior but because they were suffering from emotional troubles. The Rorschach test was used in analysing the personality characteristics of seven failing students, and all of them showed indications of immaturity and tendencies of severe tension. Five of them tended to be highly impulsive under stress and two withdrew from reality to a very large extent. Patrie[2] (1948) studied the selection of medical students at the St George Hospital Medical School, London. Maudsley Medical Inventory, a measure of neuroticism, was administered to the students. It was found that better students were relatively free from neuroticism.

Molish, Molish and Thomas[3] (1950) wanted to see if a group of sixty highly intelligent fourth year medical students possessed any specific pattern of Rorschach characteristics compared with various other groups of superior adults studied by other investigators. They found that the medical students resembled other superior adults in productivity, intellectual drive and organisational energy, in accuracy and originality of interest content but showed a greater emphasis on Dd (rare detail) in mode of approach, and gave significantly more white space responses than did the members of the other groups. They were similar to the members of other superior groups in their richness of sources of energy available for adjustment, but had an unusual frequency of shading and colour shocks. Half of the group of medical students were introversive, quarter extratensive and quarter almost ambi-equal.

Stubbs, Morris, Calvin and Whitaker[4] (1951) investigated the efficacy of the interview for the selection of medical students at the State University of Iowa College of Medicine. It was noted that the panel of five interviewers in the year 1948-49 and another nine interviewers in the following year differentiated at one percent level of confidence between the finally accepted and rejected candidates on thirteen variables considered important for medical success. The panel also produced data demonstrating striking agreement between two independent interviewers. In the opinion of the interviewers qualities named general alertness, ability to present ideas, self confidence, motivation for the earnestness about a career in medicine were of primary importance. Other qualities which were considered important were emotional stability, judgment, perspective and independence of thought. It was suggested that careful interview ratings of characteristics might be of considerable help in the selection of medical students. It was emphasised that the qualities to be assessed must be clearly defined, and the interviewers while having a common rating form as a guide, should be allowed freedom to deal with the interviewees in their own ways.

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[1] R.W. Waggoner and T.W. Zeigler, "Psychiatric Factors in Medical Students who Fail", *American Journal of Psychiatry*, 1946, 103, 369-376.

[2] A. Patrie, "The Selection of Medical Students", *Lancet*, 1948, 255, 325-327.

[3] H.B. Molish, E.E. Molish and C.B. Thomas, "A Rorschach Study of a Group of Medical Students", *Psychiat. Quart.* 1950, 24, 744-774

[4] T. Stubbs, W.W. Morris, D.B. Calvin and C.A. Whitaker, "How can the Interview Contribute Most in the Selection of Medical Students"? *Journal of Medical Education*, 1951, 26, 175-178.

Eron[1] (1955) investigated changes in several characteristics as related to medical training and observed great variations among the Freshmen students in a single college. When compared to law freshmen, medical freshmen scored lower on anxiety and cynicism. Both male groups were lower than first year nurses in humanitarianism. Differences on all characteristics were also found among four groups of fourth year students who had indicated their choice of different specialities in medicine. It was also noted that, year by year, students did score higher on cynicism and lower on humanitarianism.

Stern and Scanlon[2] (1958) used Activities Index to study the need pattern of medical students and found that the students obtained rather high score on the need to achieve and on a set of needs related to intellectual interests and intraception. Freshmen in two medical colleges scored high on a scale measuring need to change. However, on an exhibitionism scale and several scales related to the concept of autonomy, they scored relatively low. The authors concluded that there is a definite relationship between measured personality characteristics and choice of speciality.

Gee[3] (1960) presented some personality differences among medical student group on the "Study of Values". The findings on this scale, true for almost all large group of medical students are the high theoretical scale and low economic scale scores. The political scale is scored second high and the social scale is always one of the two lowest. Gee also found interesting differences in the major value orientations among the students choosing the various specialities, with the greatest diversity appearing on the aesthetic and economic scales.

Rossi and Neuman[4] (1961) administered group Rorschach test to 188 medical students with a view to establish norms for this group and hoped that this study will serve as an impetus for others to devote time and energy needed to establish Rorschach norms for other special groups. The mean scores for the medical students conform to the expectations.

Category	Mean Score
R	33.6
W	10.6
D	17.1
Dd	5.1

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[1] Leonard D. Eron, "Effect of Medical Education on Medical Students' Attitudes", *Journal of Medical Education,* 1955, 30, 559-566.

[2] George G. Stern and John C. Scanlon, "Pediatric Lions and Gynecological Lambs", in *The Ecology of Medical Student,* chap. i, B, pp. 12-18.

[3] Helen H. Gee, *Selection and Educational Differentiation*, Report of a Conference, May 25-28, 1959, Berkley, Field Service Center and Center for the Study of Higher Education, 1960.

[4] Ascanio M. Rossi and Gerard G. Neuman, "A Comparative Study of Rorschach Norms: Medical Students", *Journal of Projective Techniques,* 1961, 25, 334-338.

Category	Mean Score
S	0.76
M	3.7
FM	3.9
m	1.3
k	0.07
K	0.23
FK	0.3
F	19.1
c	1.8
C'	0.91
FC	2.7
CF	1.2
C	0.47
Sum C	3.2

Recently an interesting study of changing values of medical school students was performed by Gordon and Mensh[1] (1962). They administered a value test, Gordon's Survey of Interpersonal Values (SIV) to all students (N=222) in the first through fourth year classes in a large medical college. A predicted decrease in Benevolence from first through fourth year was found, which suggests that being benevolent, in the sense of wanting to help other people becomes decreasingly important to the medical student. Students' increased valuing of Independence as he progresses through medical school was also found. In addition, significant increases in Support and Recognition and a significant decrease in conformity were also noted.

(d) TEACHING

In India Adaval[2] (1952) was perhaps the first to carry out a comprehensive investigation on the personal qualities of teachers under training. The qualities of student teachers measured in this study are (a) Motives of student teachers in joining the profession (b) Physical health and fitness (c) Intelligence (d) General knowledge and (e) Aptitude for teaching. The methods employed were Questionnaire and tests. The number of cases on whom tests and questionnaires were administered ranged from 306 to 669. The results show that the first six motives having the highest frequency and percentage of student-teachers mentioning them, for joining the profession of teaching were ranked as follows: (1) wanted to acquire more knowledge (2) loved to teach (3) liked children (4) public service (5) loved cultural life and (6) forced by circumstances. Majority of the students were found to be in good physical health needed for successful classroom service. The level of general knowledge was found to be rather low. The mean I.Q. on the Otis Self Administering Test of Mental Ability was 91.35 with a S.D. of 9.28. It was also found that majority of the students in the training colleges did not have aptitude for the teaching profession. Many suggestions for improving the quality of student teachers were made. These suggestions relate to selection of student teachers, duration of the training period, planning the courses of study, organisation of practical training and examinations.

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[1] L.V. Gordon and I.N. Mensh, "Values of Medical School Students at Different Levels of Training", *Journal of Educational Psychology*, 1962, 53, 48-51.

[2] Subodh B. Adaval, *An investigation into the Quality of Teachers under Training*, Unpublished Doctoral Thesis, Allahabad University, 1952.

In a study of the adjustment problems of the pupil teachers Shrimali[1] (1952) found that there is a considerable maladjustment among pupil teachers, which is a serious danger to educational work. The study was carried out with a batch of fifty students of the Vidya Bhawan Teachers College, Udaipur. The questionnaire method was employed to elicit responses from the subjects. The questionnaire included questions on the following aspects: (a) adjustment with teaching profession (b) adjustment with social life of the school (c) adjustment with the administration (d) adjustment with children (e) adjustment with the family and (f) adjustment with personal affairs. The results showed that 40 percent of the pupil teachers felt that teaching is not sufficiently enriching for them, 58 percent felt that their colleagues have taken undue advantage of their sympathy for them, 60 percent felt that their authorities have generally failed to appreciate the value of individual freedom and 78 percent pupil teachers expressed that they felt irritated if children were careless and unclean in their work. It was suggested that more emphasis should be laid on the personality factors in the selection of teachers and that suitable tests for assessing the personality of the candidates should be devised and standardised.

Ohlsen and Schulz[2] (1955) tried to identify differences in responses of best and poorest student teachers on Alexander's adaptation of the Thematic Apperception Test. Forty-nine students in each of the extreme group were selected for the study. All the students wrote stories in response to five pictures in a group situation. The following information about each student-teacher was obtained by analysing the stories: an over-all evaluation of the students' personal adjustment, a diagnostic picture of the deviate's problems, a description of his general relationship with people and a description of the kind of situation in which he would probably get along best. Analysis of students personal adjustment showed that there were fifteen students in each group who could profit from counselling. There were five others in the best group and two in the poorest group who were seriously disturbed. The content analysis of the stories with the help of a number of questions, produced significant differences for best and poorest teachers on a number of questions. It was suggested that this method could prove to be very useful in selecting teacher education candidates.

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[1] P.L. Shrimali, "A Study of Adjustment Problems of Pupil-Teachers", *Journal of Education and Psychology*, 1952, 9, 19-23.

[2] Merle M. Ohlsen and Raymond E. Schulz, "Projective Test Response Patterns for Best and Poorest Student-Teachers", *Educational and Psychological Measurement*, 1955, 15, No. 1, 18-27.

R.S. Devi[1] (1958) studied the Rorschach variables which differentiate between the most and least efficient student-teachers. She employed the group Rorschach technique. The sample consisted of 200 students, who were under training for the B.Ed. course at the Central Institute of Education, Delhi. Out of 200, only 100 protocols were selected for detailed analysis. The groups, most efficient and least efficient were formed on the basis of marks obtained in practice teaching and staff ratings. The results showed that 19 Rorschach variables differentiated significantly the two groups of student-teachers at .01 level, three variables differentiated at .02 level and six variables at .05 level. The norms of the most efficient student-teacher are as follows:

Rorschach Variables	Means
R	32.66
W	8.36
D	19.74
d	4.24
s	1.60
F	16.02
C	0.42
CF	2.74
FC	1.84
Sum C	4.50
M	3.86
FM	4.62
m	0.78
c	0.40
FK	1.62
C'	0.46
A	7.18
H	4.36
W%	28.40
D%	59.02
d%	13.06
s%	4.82
F%	50.60

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Garrison and Scott[2] (1961) compared the personal needs of college students preparing to teach in different teaching areas. Personal needs were measured by Edwards Personal Preference Schedule. The subjects of this study were 530

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[1] R.S. Devi, *An Exploratory Study of the Rorschach Variables Differentiating Between the Most and Least Efficient Student-Teachers*. Unpublished Master's Dissertation, Delhi University, 1958.

[2] Karl C. Garrison and Mary Hughie Scott, "A Comparison of the Personal Needs of College Students Preparing to Teach in Different Teaching Areas", *Educational and Psychological Measurement*, 1961, 21, No. 4, 955-964.

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college students enrolled at the University of Georgia and preparing to teach. The students were classified into five areas of teaching: (1) Lower elementary (2) Upper elementary (3) General secondary (4) Non-general secondary and (5) Special education. F tests of the significance of the inter-area differences in means for each of the fifteen personal needs scores were found out. A highly significant difference (.01) was obtained on the need for achievement. Significant differences at the .05 level were also found on the need for nurturance, the need for order and the need for succorance. The other differences observed did not meet the criteria of .05 for significance.

Vertein[1] (1961) sought information about the personal-social and intellectual characteristics of students preparing to teach in a Wisconsin State College. The subjects were 114 students enrolled in a sophomore course in educational psychology. Data gathering devices used in this investigation were a 19 page data booklet to identify personal-social characteristics, "K" score of MMPI, Minnesota Teacher Attitude Inventory (MTAI), California Test of Mental Maturity (CTMM) and a ten item attitude scale to measure student attitude toward the course and method of instruction. The mean "K" score of the MMPI, which measures students emotional stability and test taking attitude, was 15.79. The highest possible score is 30. The mean score on the CTMM was 112.96 and the S.D. was 10. 38. The mean of ten item attitude scale indicated that the students have a less favourable attitude toward the method of instruction than toward the course content in educational psychology. Students in this study showed a somewhat undesirable attitude in teacher-pupil relationship. This was evidenced by low mean score on the MTAI. It was suggested that the less acceptable attitude in teacher-pupil relationship be studied further to determine the reasons for this lack so that proper planning of the programme of teacher education could be done with a view to improve this attitude in teacher-pupil relationship.

In a recent study Gillis[2] (1964) attempted to identify the need structure of future teachers. The responses of 701 teacher trainees to Stern's Activities Index were compared with those of a norm group of 1080 undergraduate students from thirty two American colleges and universities. It was found that future teachers do differ significantly in their needs structure from a general population of college students. When compared with the norm group teacher-trainees expressed less need for intellectualism and a stronger need for dependency relationships. In the area of intellectual needs teacher trainees expressed greater need for conjunctivity (the organisation of cognitive activities) but reported less need for humanism, objectivity and understanding. In the sphere of dependency, future teachers expressed stronger needs for abasement, affiliation, blame avoidance, deference, nurturance, order and succorance. In terms of their needs for impulse expression, future teachers expressed greater needs for emotionality, nar-

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[3] Lester Dale Vertein, "A Study of the Personal-Social and Intellectual characteristics of a group of State College Students Preparing to Teach", *Journal of Experimental Education*, 1961, 30, No. 2 159-191.

[1] John Gillis, "Personality Needs of Future Teachers", *Educational and Psychological Measurement*, 1964, 24, No. 3, 589-600.

cissism, sentience and sex. These differences it was suggested, might be of considerable importance to those concerned with the recruitment and training of teachers.

In another recent study Evans[1] (1964) compared the reasoning abilities and personality characteristics of two representative samples of student-teachers namely university graduates and training college students. The training college sample consisted of 145 students while the second group of students comprised 144 graduates who were pursuing a one-year teacher training course in a university. Three different kinds of standardised group tests were administered uniformly to both samples. These were chosen to give measures of (1) verbal reasoning ability (2) mental speed and accuracy and (3) following personality attributes: Neuroticism, extraversion, self confidence, sociability (and their opposites). The Maudsley Personality Inventory provided scores for neuroticism and extraversion while revised Bernreuter Inventory gave measures of self confidence and sociability. Significant differences were found on the extraversion and sociability scales with training college students gaining higher scores than the graduates. Thus both training college men and women appeared to be much more extraverted than university men. On the sociability test, training college women obtained better scores than university men and even training college men. The neuroticism and self confidence scales, however, produced no difference between any of the groups, though there was a tendency for training college men to be more confident than university women.

General Conclusions

These research findings were available with respect to the personality characteristics of students in four professions namely teaching, engineering, medicine and law at the time the present study was undertaken. Because of the use of diverse tools, techniques and designs in these investigations it is difficult to derive common conclusions. However, an attempt will be made to draw some conclusions:

(1) A large number of comparative studies have been undertaken on the personalities of men in various occupations. These studies cover a wide variety of occupational groups.

(2) The techniques employed in these studies mainly consist of ratings, personality inventories and projective tests.

(3) In many of these studies the Rorschach test, both individual and group has been used.

(4) In a majority of these investigations significant differences between occupational groups on many scales or variables have been reported.

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[1] E.G.S. Evans, "Reasoning Ability and Personality Differences among Student Teachers", *British Journal of Educational Psychology*, 1964, 34, 305-314.

(5) Many of these differences were related to intellectual level.

(6) A very small number of comparative studies have been undertaken on students preparing for different professions.

(7) The data for such studies have been obtained from the measurement of a very limited area of personality.

(8) Quite a large number of researches have been reported on the personality characteristics of students in four professions separately namely teaching, engineering, medicine and law.

(9) Main areas of personality measured in these studies include intelligence, attitude, motives, values, needs, adjustment and inter-personal relationships.

(10) A wide variety of tools and techniques have been used in these studies such as the interview, the questionnaire, ratings, psychological tests, personality inventories, and projective techniques.

(11) Majority of the investigators have used either the normative survey method or personality inventories for the collection of data.

(12) Personality characteristics of each group of professional students as revealed in these studies are given below:

Engineering Students

They are characterised as stable and self sufficient. Engineering students who do better work than their intelligence level would suggest, are high in intellectual adaptibility, cautiousness, inhibition, and the needs to achieve, to gain status, and to improve themselves. They are realistic in approach to problems.

Law Students

Law students are high on general anxiety and cynicism i.e., continuous disbelief in man's sincerity and motives.

Medical Students

Senior medical students have intellectual drive, organisational energy, accuracy and originality of interest content. Majority of them are introversive. They are high on theoretical and political values and on the need to achieve, need to change and on a set of needs related to intellectual interests and intraception. Being benevolent in the sense of wanting to help other people, becomes decreasingly important to the medical student.

Student-Teachers

Student-teachers are characterised as having higher motives of acquiring more knowledge, love for work and for the children, public service and the cultural life offered by the profession. They are not well adjusted with their profession, with the school and with the administration. They have a somewhat unfavourable attitude toward teacher-pupil relationship. They are high in the need for dependency relationship and show greater need for conjunctivity, emotionality and narcissism.

The Present Study

The review of research literature related to the problem, presented in the foregoing pages, indicates that very few comparative studies were conducted in western countries on the personality characteristics of students preparing for different professions. The two early studies reported on the subject are those of Kaback (1946) and Blum (1947). These studies were either limited in number of professions compared or the data were based on a very limited area of personality. To the best knowledge of the investigator, no such study has so far been conducted in India. The present study departs from the previous investigations in that it covers students preparing for four important professions namely engineering, law, medicine and teaching. It not merely attempts to find out the personality characteristics of students in one profession as done in some studies in Indian setting, but it also tries to compare the personality characteristics of students in these four professions. It covers a much wider field and attempts to measure different areas of personality considered important for success in the professions. It employs both personality inventories and projective tests for the collection of data. The present study also tries to discover typical personality characteristics of students in the four groups and offer suggestions regarding these characteristics for educational and vocational planning of students.

CHAPTER III

DESIGN OF THE STUDY

The research problem has been formulated in the preceding pages. In this chapter, the design of the study is set under the following heads:

(a) The Sample
(b) The Tools and Techniques
(c) The Collection of Data
(d) Statistical Procedure

The Sample

The sample of the present study consisted of 200 male students preparing for the professions of engineering, law, medicine and teaching. Subjects were drawn from four professional colleges located in the city of Allahabad, namely, 50 fourth year engineering students from Moti Lal Nehru Regional Engineering college, Allahabad, 50 final year law students from Law College, Allahabad University, Allahabad, 50 fourth year medical students from Moti Lal Nehru Medical College, Allahabad and 50 student-teachers from Government Central Pedagogical Institute, Allahabad. Only senior students who had almost completed their professional training and were on the verge of entering the profession were selected from each professional college. The following Table shows the distribution of cases according to class and institution:

Table III. 1

Distribution of Cases According to Class and Institution

S. No.	No. of Cases	Class	Degree for which Preparing	Institution
1.	50	4th year	B.E.	Moti Lal Nehru Regional Engineering College, Allahabad.
2.	50	Final year	LL.B.	Law College, Allahabad University, Allahabad.
3.	50	4th year	M.B.B.S.	Moti Lal Nehru Medical College, Allahabad.
4.	50	Final year	L.T.	Govt. Central Pedagogical Institute Allahabad.

The engineering students were selected from the three engineering departments of the Moti Lal Nehru Regional Engineering College, Allahabad as shown in the following Table:

Table III. 2

Distribution of Engineering Students according to Departments

Departments	No. of Students
Civil Engineering	16
Electrical Engineering	16
Mechanical Engineering	18
Total	50

The group of student-teachers was composed of persons who had studied and were now teaching in the fields of Humanities and Sciences. There were 40 Arts students and 10 Science students. All the student-teachers had completed at least 40 lessons in practice teaching at the time that the psychological tests were administered to them.

With a view to evaluate experimental findings and to emphasise the psychological differences between the students in four professions, it was decided to equate the four groups on some variables. Considering the diversity of the groups the equating was done only as far as possible, for a perfect equating is an impossibility. Ackoff[1] rightly remarked that, "the variables used should be such as will be useful in the specific research. In many psychological and social research situations manipulation of all the variables is not possible. Hence research must be determined in situations which differ from the idealised one". For these reasons, only those variables which could be manipulated and were found to be useful were controlled. These variables are: (1) Geographical location (2) Sex (3) Residence (4) Occupational interest (5) Age and (6) Economic Status.

Geographical Location

All the four groups namely, engineering students, law students, medical students and student-teachers were drawn from the same geographical location, that is, from four professional colleges located in the city of Allahabad.

Sex

All subjects were males. Female students have not been included in the sample because personality characteristics of females is likely to differ widely from those of males. Hence the two sexes need separate studies.

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[1] R.L. Ackoff, *The Design of Social Research*, 1953, Chap. III, 77-78.

Residence

The sample comprised students who lived in the college hostels. Only hostelers were included in the study because hostel life in some measure equalises the inequality of home background. Another important reason for the inclusion of hostelers was the ease and facility in contacting the students for the administration of individual tests.

Occupational Interest

The sample included only those students who had genuine interest in professional work and who offered clear indication of commitment to their profession. For this purpose the selection of students was done on the basis of a short interview with each student after he had filled in the Information Blank.

Age

The sample covers age range from 20+ to 24+. This age range was selected to achieve a homogeneous age grouping in the four samples under consideration. The subjects of the four groups were matched as far as possible in respect of their chronological age. The following table shows the distribution of cases according to age:

Table III. 3

Distribution of Cases according to Age

Sample	20+	21+	22+	23+	24+	Total
Eng. Stu.	9	14	17	5	5	50
Law Stu.	6	10	16	10	8	50
Med. Stu.	7	12	15	9	7	50
Stu. Tea.	5	11	19	7	8	50
	27	47	67	31	28	200

$X^2=5.30$ df=12 P—Not Significant

The application of Chi-square test on the distribution of cases over five age groups revealed that there is no significant difference between engineering, law, medical students and student-teachers over this distribution. The value of Chi-square calculated for this table has been found to be insignificant at 0.05 level. This confirms that the four groups are equated in respect of age.

Income

The four groups have also been equated as far as possible in respect of income of their families. The following table shows the distribution of cases according to monthly income:

Table III. 4

Distribution of Cases According to Monthly Income

Sample	Rs 150 & Below	Rs 151 to Rs 350	Rs 351 to Rs 500	Rs 501 to Rs 1000	Rs 1000 & above	Total
Eng. Stu.	3	10	14	15	8	50
Law Stu.	6	15	19	7	3	50
Med. Stu.	5	12	18	10	5	50
Stu. Tea.	8	16	20	4	2	50
	22	53	71	36	18	200

$X^2=17.25$ df=12 P—Not Significant

The Chi-square value (17.25) given in the above table is not significant at 0.05 level, indicating that there is no significant difference between the four groups under consideration on Income. This confirms that the matching of the groups for Income is statistically adequate.

Educational Data

Since information regarding educational data was also obtained through Information Schedule, it would be interesting to present here the position regarding the class or division secured by the subjects in the High School and Intermediate Examinations. The following table shows the distribution of cases on High School results:

Table III.5

Distribution of Cases on High School Results

Sample	I Class	Not I Class	Total
Eng. Stu.	31	19	50
Law Stu.	12	38	50
Med. Stu.	9	41	50
Stu. Tea.	10	40	50

Application of Chi-square test on this distribution, when two groups were compared at a time, indicated the overall superiority of engineering students on High School results. The following table shows the Chi-square values and the significance levels for different groups:

Table III. 6

Differentials in High School Results

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	14.73	1	0.01
2.	Eng. Stu. & Med. Stu.	20.17	1	0.01
3.	Eng. Stu. & Stu. Tea.	18.23	1	0.01
4.	Law Stu. & Med. Stu.	0.54	1	NS
5.	Law Stu. & Stu. Tea.	0.23	1	NS
6.	Med. Stu. & Stu. Tea.	0.13	1	NS

Table III. 6 shows that in case of groups with serial Nos. 1, 2 and 3 the Chi-square values are significant at 0.01 level, while groups with serial Nos. 4, 5 and 6 showed no significant difference among themselves. This indicates that the engineering students are much superior as regards High School Results are concerned, while law students, medical students and student-teachers are alike on this variable.

The distribution of cases on Intermediate Results shows similar trends as will be seen from the table given below:

Table III. 7

Distribution of cases on Intermediate Results

Sample	I Class	Not I Class	Total
Eng. Stu.	37	13	50
Law Stu.	5	45	50
Med. Stu.	3	47	50
Stu. Tea.	1	49	50

The application of Chi-square test on this distribution, when two groups were compared at a time, again shows the over all superiority of engineering students. The comparison of different groups on Intermediate results is given in the following table:

Table III. 8

Differentials in Intermediate Results

S.No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	42.04	1	0.01
2.	Eng. Stu. & Med. Stu.	48.17	1	0.01
3.	Eng. Stu. & Stu. Tea.	55.01	1	0.01
4.	Law Stu. & Med. Stu.	0.54	1	NS
5.	Law Stu. & Stu. Tea.	2.84	1	NS
6.	Med. Stu. & Stu. Tea.	1.04	1	NS

Table III.8 clearly shows that in case of groups with serial numbers 1, 2 and 3 the Chi-square values are larger than in High School results. This indicates that there is greater differentiation between engineering students and other groups on Intermediate results than on High School results. Law students, medical students and student-teachers have again not been differentiated on Intermediate results.

It can, therefore, be concluded that the engineering students are outstandingly superior as compared to other three groups on High School as well as on Intermediate results, while law students, medical students and student-teachers are alike on these results.

The Tools and Techniques

Having selected the sample, the next task was to choose suitable tools for the collection of data. The selection of tools for a particular study depends upon various considerations such as the objectives of the study, the amount of time at the disposal of the investigator, availability of suitable tests, personal competence of the examiner to administer, score and interpret the test results and the like. Taking into consideration these factors a carefully selected Battery of Tests was used to find out and compare the personality characteristics of students preparing for four different professions namely engineering, law, medicine and teaching. The following tools were included in the battery:

(1) Information Schedule

(2) Two Personality Inventories
  (i) Allport-Vernon-Lindzey Study of Values
  (ii) Saxena's Adjustment Inventory (On the lines of Bell's Adjustment Inventory)

(3) Two Projective Tests
  (i) The Rorschach Ink-Blot Test
  (ii) The Thematic Apperception Test

Information Schedule

To understand the complex nature of personality of an individual, which is the product of a number of psycho-social forces, it is necessary to know the socio-economic background of the individual. This information is also very helpful in scoring and interpreting the responses of the projective tests. For collecting relevant information on various background factors the investigator prepared an Information Schedule,[1] which provides data regarding subject's name, age, caste, religion, economic status, scholastic attainments, interest in the professional work etc.

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[1] See Appendix B.

Approaches to Personality Measurement

Different approaches exist for the assessment of personality. Psychologists are in favour of employing a combination of at least two approaches. According to Anastasi "Most psychologists today would probably accept some combination of the two approaches, although a few may align themselves exclusively behind one or the other."[1] Personality Inventories and Projective Tests, which make up the major tools used by psychologists today, have been used in this investigation to measure the personality characteristics of students in four professions viz., engineering, law, medicine and teaching. Watson is of the view that "these two approaches to testing are compatible and mutually strengthen each other. Both are legitimate, they reinforce rather than exclude each other."[2]

Personality Inventories

Inspite of many limitations, perhaps the continued widespread use of personality inventories is due in large part to the desire of many persons to get some data quickly. Many psychologists also use standardized personality questionnaires because of their greater demonstrated reliability and validity. Pointing out the utility of good personality inventories Vernon remarked that, "Well constructed Personality Questionnaires given under suitable motivating conditions can be of value both for experimental research and in clinical or other applied research work."[3] The two personality inventories used in this study are 1) Allport-Vernon-Lindzey Study of Values and 2) Saxena's Adjustment Inventory, which is based on the lines of Bell's Adjustment Inventory. These two tools have been used to determine the personality motivations and adjustments of students in four professions. Both these instruments are well-known and have been extensively used in educational and psychological research. Detailed description of these inventories have been given in Chapters IV and V.

Projective Techniques

"Projective Techniques" stated Vernon, "are the psychologists' X-Ray apparatus for penetrating beneath the facades and barriers to the deeper needs and dynamic forces in the personality.[4] They reveal the innermost drives, sentiments, feelings, needs and modes of adjustment of the subject. The greatest value of projective tests lies in their utility to reveal the total personality of the subject in contrast to that revealed by the inventories. Another important advantage of this method is that the stimulus situation is more or less unstructured which permits variety and flexibility of responses as well as allows maximum scope for the subject's own spontaneous interpretations and creations.

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[1] Anne Anastasi, *Psychological Testing*, New York: The Macmillan Company, 1956, p. 556.

[2] Robert I. Watson, *The Clinical Method in Psychology*, op. cit., p. 106.

[3] Philip E. Vernon, *Personality Tests and Assessments*, op. cit., p. 143.

[4] Philip, E. Vernon, *Personality Assessment: A Critical Survey*, London: Methuen & Co. Ltd., 1964, p. 150.

The two best established and widely used projective tests of personality are the Rorschach Ink-Blot Test and the Thematic Apperception Test. These two tests have been used in this study to probe into the structure of the personality and the dynamics of psycho-social forces of engineering, law, medical students and student-teachers. Both these tests are regarded by psychologists as supplementary to each other. Murray pointed out that "since TAT and Rorschach yield complementary information the combination of these two is peculiarly effective."[1] According to Krugman "TAT constitutes an excellent supplement to the Rorschach, the latter provides clues to the personality structure, while the former supplies the mental content and dynamics."[2]

A detailed description of the Rorschach Test and the Thematic Apperception Test is given in Chapters VI and VII respectively.

The Collection of Data

The subjects of this study were selected from four professional colleges located in the city of Allahabad. Names of the Institutions and the classes from which the samples were drawn have already been given. Principals of these institutions were approached one by one and the object and utility of the Research Project was explained. All the principals took interest in the project and provided necessary facilities for the collection of data. The procedure followed for the collection of entire data is mentioned in the following paragraphs:

First of all the investigator gave a short orientation lecture to the subjects. The subjects were told that the investigation was designed to study their personality and that the results of the investigation would be benificial to them. Then they were given the Information Schedule to be filled in. A short personal interview was then conducted by the investigator to find out each subject's interest in the professional work and his commitment to the profession. Later on Information Schedules were scrutinised and subjects who fulfilled the requirements of matching were selected for further testing.

The selected students were then administered the two personality inventories namely The Study of Values and the Adjustment Inventory in small groups in their respective colleges on a date and at a time fixed up by the principal for this purpose. The subjects were requested to answer the questions truthfully. They were assured that the responses would be kept strictly confidential.

Lastly, the two projective tests, that is, the Rorschach and the TAT were administered to the subjects individually. The administration was arranged in the college hostel after the college hours or on Sundays and holidays. A separate room was provided in the hostel by the Warden for testing where these tests were administered according to a schedule. Leaving a few exceptions these two tests were given to a subject in two sessions after a gap of 24 hours.

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[1] H.A. Murray *Manual for the Thematic Apperception Test*, Cambridge, Mass. Harvard University Press, 1943, p.1.

[2] Morris Krugman, Review of the Rorschach Test, In the *Third Mental Measurements Yearbook*, Edited by Oscar Krisen Buros, New Jersey: The Gryphon Press, Third Printing 1960

Testing averaged about 5 hours in each case. To ensure objectivity and uniformity in the investigation the entire testing and scoring was done by the investigator himself.

After the testing was over, the test protocols of each subject were scored according to the instructions and norms given in the test manual or according to the system followed by the investigator. Detailed description of these procedures have been given in the subsequent chapters.

Statistical Procedure

The following statistical procedures were adopted for the analysis of data:

(1) The raw scores of the engineering, law, medical students and student-teachers on the Study of Values, Adjustment Inventory, Rorschach Test and the TAT were tabulated separately into frequency distributions and Mean and Standard Deviations were calculated according to the usual formulae.

(2) To determine the agreement between the rankings of six values namely Theoretical, Economic, Aesthetic, Social, Political and Religious between different groups, Rank Order Correlation (Rho) was calculated according to the usual formula.

(3) Comparison between different groups on the Study of Values, Adjustment Inventory and the TAT were made on the basis of t-test. In calculating 't' the following formula,[1] which is used for finding out difference between uncorrelated means in two samples of equal size, i.e., $N_1 = N_2$ was applied:

$$t = \frac{M_1 - M_2}{\sqrt{\frac{\Sigma x_1^2 + \Sigma x_2^2}{N_i(N_i - 1)}}}$$

Where N_i = Size of either sample.

To test the significance of 't' value the following levels of confidence were established:

(1) Not significant at the 0.05 level or merely not significant if 't' value was 1.97 or less.

(2) Significant at the 0.05 level or merely significant if the t-value was between 1.98 and 2.61.

(3) Significant at the 0.01 level or highly significant when the t-ratio was 2.62 or larger.

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[1] J.P. Guilford, *Fundamental Statistics in Psychology and Education*, Asian Students Edition, McGraw Hill Book Company Inc. Tokyo: Kogakusha Company Ltd., 1956, p. 220.

(4) In the analysis of the scores on the Study of Values, Adjustment Inventory and the TAT, Variances were compared for homogeneity before obtaining the value of 't'. The following formula was used:

$$F = \frac{\text{Larger Variance}}{\text{smaller Variance}} \text{ or } \frac{S_1^2}{S_2^2} \text{ or } \frac{S_2^2}{S_1^2}$$

In cases where significant difference was found in the Variances the application of 't' test was modified as suggested by Edwards[1] i.e., the table of 't' was entered with one half the usual number of degrees of freedom.

(5) The 't' test was also applied to find out inter-value differences within each group. In this case S.E. of the difference between correlated means was calculated by the following formula:[2]

$$S.E_D = \sqrt{\sigma^2_{M_1} + \sigma^2_{M_2} - 2 r_{12}\, \sigma_{M_1} \sigma_{M_2}}$$

$$\text{and t ratio} = \frac{M_1 - M_2}{S.E_D}$$

(6) Correlations between different value variables within each group and between different Rorschach variables within each group were obtained by Thompson's Diagonal Method. The formula used for this was:

$$r = \frac{H + V - D}{2\sqrt{HV}}$$

where r = Coefficient of Correlation
H = Horizontal Variability
V = Vertical Variability
D = Diagonal Variability

Check used : $2(H + V) = D + D'$

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[1] Allen L. Edwards, *Statistical Methods for the Behavioral Sciences,* New York: Rinehart & Company Inc, 1956, p. 274.

[2] Henry E. Garrett, *Statistics in Psychology and Education,* Indian Edition, Bombay: Allied Pacific Private Ltd., 1962, p. 226.

(7) Chi-square as a test of significance was applied to differentiate different groups on grades of General as well as Home, Health, Social, Emotional and College adjustment. It was also applied to find out differences in Background factors, namely Age, Income and Educational Data. The confidence levels established in this test were the same as that in the case of 't' test. The formula used for the calculation of Chi-square is given below:

$$X^2 = \Sigma \left[\frac{(f_o - f_e)^2}{f_e} \right]$$

$$df = (r-1)\ (c-1)$$

(8) In case of Rorschach variables the Median Test was used to find out differences between two groups. This involved finding a common Median for the two samples being compared and the number of cases above and below the common Median were counted, resulting in a fourfold contingency table as shown below:

	Below Mdn.	Above Mdn.
Eng. Stu.	(A)	(B)
Med. Stu.	(C)	(D)

The Chi-square was calculated by the following formula:

$$X^2 = \frac{N\ (AD - BC)^2}{(A + B)\ (C + D)\ (A + C)\ (B + D)}$$

(9) For knowing the levels of significance of difference between any two groups the Table D (Table of 't'), Table E (X^2 Table), for Significance of F-Ratios Table F and for significance of correlation Coefficient Table 25 of Garrett was used.

(10) Other statistical techniques used in the analysis of data have been given in chapters IV, V, VI and VII dealing with Study of Values, Adjustment Inventory, Rorschach Ink-Blot Test and Thematic Apperception Test.

CHAPTER IV

STUDY OF VALUES

Nature of Value

The term value is generally employed to designate a dominant interest, motive or broad evaluative attitude. Value has been defined variously by different writers and interpreted to be either a set, or a feeling or an action. According to Murphy, Murphy and Newcomb[1] "a value is simply the maintenance of a set toward the attainment of a goal". In the opinion of Allport[2] "ordinarily attitude should be employed when the disposition is bound to an object or value, that is to say, when it is aroused by a well-defined class of stimuli, and when the individual feels towards these stimuli a definite attraction or repulsion". Everett[3] remarked that "every value must be viewed not merely as an agreeable feeling in some consciousness, but also an activity by and through which the feeling is constituted". As feeling, set and action are interconnected and cannot be separated it would be proper to consider value as a product of feeling, set and action.

In this chapter an attempt has been made to discover and compare values of students in four professions, namely Engineering, Law, Medicine and Teaching. Samler[4] remarked, "values should be subject to explicit examination, as criteria for choice, as determinants of behaviour". Allport in his recent revision of his volume on Personality[5] writes that to the study of values there are two main approaches worthy of note. These approaches are his own and that of Morris[6]. Indeed many researches have utilized the Allport-Vernon Study of Values which, since its construction, has exerted a strong influence on research. The review of literature[7] testifies to the rich preoccupation with the Study of Values and the many efforts to relate its scores to a wide range of social and psychological variables. This test (Indian Modification by K. Ray-Chowdhury) has been used in this investigation. A brief description of the test is given below:

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[1] Gardner Murphy, Lois Barclay Murphy and Theodore M. Newcomb, *Experimental Social Psychology*, New York: Harper & Bros., 1937, p. 199.

[2] Gordon W. Allport, *Personality: A Psychological interpretation*, p. 294.

[3] Walter Goodnow Everett, *Moral Values*, New York: Henry Holt & Co., 1918, p. 143.

[4] Joseph Samler, "Changes in Values: A Goal in Counseling" *Journal of Counseling Psychology*, 1960, 7, No.1, p. 33.

[5] Gordon W. Allport, *Pattern and Growth in Personality*, New York: Holt, 1961.

[6] Charles Morris, *Varieties of Human Values*. Chicago: The University of Chicago Press, 1956.

[7] W.F. Dukes, "Psychological Studies of Values" *Psychological Bulletin*, 1955, 52, 24-50.

Study of Values

Introduction

This test is designed to measure the relative prominence of six dominant interests, motives or evaluative attitudes in personality. It was originally developed by G.W. Allport and P.E. Vernon in 1931 and was revised in 1951 by Allport Vernon and Gardner Lindzey. The main changes of this revised scale according to the Test Manual[1] are an improvement in the diagnostic power of items, a simplification of wording and a modernisation of certain items, a more economic scoring system, redefinition of social value, fresh norms and increase in the reliability of the test as a whole. Commenting on this revised scale Shaffer[2] remarked "In its excellent new revision, the Study of Values seems destined to several more decades of service as a tool for guidance and for research".

According to Super and Crites[3] "This test is first of its kind, has been most thoroughly studied and is still most widely used". Reviewing the Study of Values Gage[4] remarked "The test gives impression of being an intelligent test for intelligent people. For counseling and vocational guidance and for research on a wide variety of psychological questions the test is very good". Summarising the merits of the test Harrison[5] pointed out that "The Study of Values would appear to be a dependable and informative instrument. It has a definite theoretical basis, its statistical properties are adequate and it yields scores which possess utility for both group and individual interpretation. Within the appropriate context the test possesses considerable merit and utility".

The Study of Values is basically rooted in Spranger's contention that personality can be inferred from an individual's values. Spranger in his book "Types of Men"[6] specifies six types of men:

1. The Theoretical, with dominant interest in the discovery of truth.
2. The Economic, with characteristic interest in the practical and the useful in a definitely materialistic sense.
3. The Aesthetic, with chief interest in the artistic aspects of life, looking always for form, harmony, grace, symmetry or fitness.
4. The Social, tending strongly towards love of people whether of one or many, whether conjugal, friendly or philanthropic.
5. The Political, aiming at place, prestige, dominance and power, and

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[1] G.W. Allport, P.E. Vernon and Gardner Lindzey, *Manual for the Study of Values*, Boston: Houghton Mifflin Company, 1960, p. 9.

[2] Laurance F. Shaffer, Review of the Study of Values, *Journal of Consulting Psychology*, 1951, 15, p. 515.

[3] Donald E. Super and John O. Crites, *Appraising Vocational Fitness*, Revised Edition, New York: Harper & Row, 1962.

[4] N. L. Gage, Review of the Study of Values, in the *Fifth Mental Measurements Yearbook*, p. 200.

[5] G.G. Harrison, Review of the Test, in the *Fourth Mental Measurements Yearbook*, p. 156.

[6] E. Spranger, *Types of Men*, Translated from 5th German Edition of Lebensformen by Paul J. Pigors, Halle: Max Niemeyer Verlag.

6. The Religious, desiring to comprehend the cosmos and to see the unity of man with the cosmic totality.

Content

The test contains 45 questions and is divided into two parts. There are thirty items in part one and fifteen items in part two. It employs forced choice items which require a choice between two or four alternatives falling in different value categories. In the first part two alternatives have to be rated either as 3 and 0 or 0 and 3 or 2 and 1 or 1 and 2 according to the agreement or disagreement with the statement. In part two the four alternatives are rated in order of personal preference, giving 4 to the most attractive, 3 to the second most attractive, 2 to the next one and 1 to the least attractive alternative.

There is no time limit for the test but it takes about 30 to 40 minutes to complete the blank. Directions are simple and scoring is easy.

Indian Adaptation

The Allport-Vernon-Lindzey Study of Values was adapted in Indian situation by K. Ray-Chowdhury in 1958.[1] According to K. Ray-Chowdhury "the adaptation of the scale in Indian situation seems to be quite satisfactory". The author has simplified the instructions given in English and illustrated certain facts or situations from Indian history and life. No item has been added or eliminated. The average of the test thus remains the same, that is to say, 40 in each category.

Norms

The adapted scale was administered on a sample of 305 post-graduate students of the University of Aligarh, Aligarh. The students belonged to various courses such as Humanities, Natural Science, Physical Science, Legal Studies, Business, Engineering, Library Science, Social Science and Teacher Training. Mean Scores and Standard Deviations were found for each of the value categories. The correction figures were determined for the Indian situation. The limits of high and low scores in the group were found out and Reliability and Validity were determined.

Reliability and Validity

The Reliability of this modified scale by the Kuder-Richardson formula for different values range from .82 to .99 as shown below.[2]

Theo	Eco	Aes	Soc	Pol	Rel
.92	.92	.82	.99	.89	.92

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[1] K. Ray-Chowdhury "Allport-Vernon Study of Values (1958 Modification) in Indian Situation", *The Indian Psychological Bulletin*, 1959, Vol 4, Pt. II, pp. 67-74.

[2] K. Ray-Chowdhury, *Manual of Directions for the* 1958 *Indian Modification of Allport-Vernon-Lindzey Study of Values*, Published by the Indian Psychological Bulletin, 21 Zakaullah Road, Aligarh, Ist Impression 1965, p. 5.

Validity has been determined on a group of 215 cases by product moment correlations obtained between the different value categories which according to Ray-Chowdhury suggest a good validity of the scale. The correlation figures support the hypothesis that those who score high in one scale score low in the corresponding value scales. Again the agreement between each value category and other tests of interests, attitudes and abilities has been studied with the product moment correlation and significant patterns of correlation have been found. Overlapping with interests, attitudes and abilities are quite revealing.

Applicability

The Study of Values has been used in a wide variety of psychological researches. The Test Manual presents an interesting list of References showing the possible range of application of the test. This scale has been used in a few cross-cultural investigations and some studies under Indian conditions. In a Comparative study of selected attitudes, values and personality characteristics of American, Chinese and Indian students Singh, Sophia and Thompson[1] reported that the Indian students got higher scores on both economic and political values and secured lowest score on the religious value. Mohsin[2] used this scale in a study of the relationship of evaluative attitudes to sex differences, intellectual level, expressed occupational interest and hobbies. Ojha[3] tried to assess the personality characteristics of teachers under training with the help of this scale. Ray-Chowdhury[4] found out group differences in values in Indian situation with the old form of this scale. Shukla[5] compared the value scores of Arts and Science Post-Graduate students of five universities in U.P. and found that the two groups differed significantly on Economic and Religious values. In a personality study of Student Leadership P. Kumar[6] reported that the leaders tended to be lower on the theoretical and religious, but higher on the economic and social values. On other values no significant difference was found.

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[1] P.N. Singh, C.H. Sophia and G.G. Thompson, "A Comparative Study of selected Attitudes, Values and Personality Characteristics of American, Chinese and Indian Students", *Journal of Social Psychology*, 1962, 57, 123- 132.

[2] S.M. Mohsin, "A Study of the Relationship of Evaluative Attitudes to Sex differences, intellectual Level, Expressed Occupational Interest and Hobbies", *Indian Journal of Psychology*, 1950, 25, 59-70.

[3] R.K. Ojha, *Personality Assessment of Teachers under Training with the help of Allport-Vernon Study of Values*, in V.G. Jhingran, Interest Inventory, D.S. Teacher's Training College, Aligarh, 1947.

[4] K. Ray-Chowdhury, "Allport-Vernon Study of Values (Old Form) in Indian Situation (Group Differences). *The Indian Psychological Bulletin*, 1958, Vol. III, Part II, 46-67.

[5] A.C. Shukla, *Value Profiles of Arts and Science Post-Graduates*, Unpublished Master's Dissertation, Allahabad University, 1965.

[6] Pramod Kumar, *Personality Study of Student Leadership*, Unpublished Doctoral Thesis, Allahabad University, 1964.

Administration and Scoring

The test was administered to the students of four professional colleges in groups of 20 to 25. Instructions for administering the test as given in the Manual and the Test Booklet were followed. The blanks were then scored by the investigator himself according to the directions for scoring the test given in the Manual of Directions. Raw scores for different value variables were obtained for each group. Correction figures as determined by Ray-Chowdhury were followed.

Statistical Procedure

The value scores of the engineering, law, medical students and student-teachers on the six scales, namely theoretical, economic, aesthetic, social, political and religious were tabulated separately into frequency distributions. Mean scores and Standard Deviations of the four groups on the six scales were calculated. The value variables for each group were ranked on the basis of mean scores and rank order correlations were found out by taking two groups at a time. Profiles for the different groups were prepared on the basis of mean values and plotted in a figure to give a comparative picture. Comparison between different groups were made on the basis of the t-test with 0.05 level of confidence considered significant. Variances were compared for homogeneity before obtaining the value of t. In cases where a significant difference was found in the variances the application of the t was modified.[1] The t-test was also applied to find out intra value differences for each group according to the formula of correlated means, and four t Matrixes were prepared. Four correlation Matrixes, one for each group, which emerged from this testing of intra value differences have also been reported.

Analysis of Data[2]

Rank Order of Values

A quick and superficial comparison of engineering, law, medical students and student-teachers with each other may be made by ranking the six values from highest to lowest for each group on the basis of the average scores. The relative positions of different values thus obtained are given in the following table:

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[1] Allen L. Edwards, *Statistical Methods for the Behavioral Sciences*, New York: Rinehart & Company, Inc., 1956, p. 274.

[2] See Appendix A for the data.

Table IV. 1*

Rank Order of Values for Engineering, Law, Medical Students and Student-Teachers

Ranks	Eng. Stu.	Law Stu.	Med. Stu.	Stu. Tea.
I	Economic (45.76)	Political (44.64)	Theoretical (44.30)	Political (42.62)
II	Theoretical (40.26)	Economic (41.18)	Social (43.12)	Theoretical (42.38)
III	Political (40.12)	Theoretical (40.08)	Economic (40.70)	Economic (39.82)
IV	Social (39.26)	Social (38.98)	Political (40.06)	Aesthetic (38.90)
V	Aesthetic (38.60)	Religious (37.58)	Religious (37.40)	Social (38.74)
VI	Religious (36.14)	Aesthetic (37.42)	Aesthetic (34.34)	Religious (37.54)

The above table shows that the engineering students placed high esteem on the economic, the theoretical and the political in order named. Law students ranked the political, the economic and the theoretical as their values of most importance. The lowest value assessment by the engineering students was for the religious, while the lowest for the law students was for the aesthetic. Medical students regarded the theoretical as the area of highest value and the aesthetic as the area of lowest value. The social value was ranked second high and economic was given the third place. Student-teachers, however, placed high esteem on the political, the theoretical and the economic. The aesthetic value was given the fourth place and the religious value was ranked as the lowest. All the four groups ranked religious value as one of the two lowest. The major changes in the positions of the political and the social values is noteworthy

Next, the six values were ranked according to means for the four groups and rank order correlation were found out between value variables for different groups taking two groups at a time. Rhos for different groups are given in table IV.2.

Table IV. 1* Eng. Stu.=Engineering Students, Law Stu.=Law Students, Med. Stu.=Medical Students, Stu. Tea.=Student-Teachers.

Table IV. 2

Rank Order Correlation between Values for Different Groups

S. No.	Groups Compared	Rho
1.	Eng. Stu. & Law Stu.	.77
2.	Eng. Stu. & Med. Stu.	.66
3.	Eng. Stu. & Stu. Tea.	.72
4.	Law Stu. & Med. Stu.	.49
5.	Law Stu, & Stu. Tea.	.77
6.	Med. Stu. & Stu. Tea.	.32

The above Table indicates that there is substantial agreement between engineering students and law students, and between law students and student teachers on the ranking of values. There is moderate relationship between law students and medical students and small relationship between medical students and student-teachers. Although none of the values of Rho are significant, yet they are high enough to suggest that a larger sample could have yielded significant values.

Value Profiles of Students in Four Professions

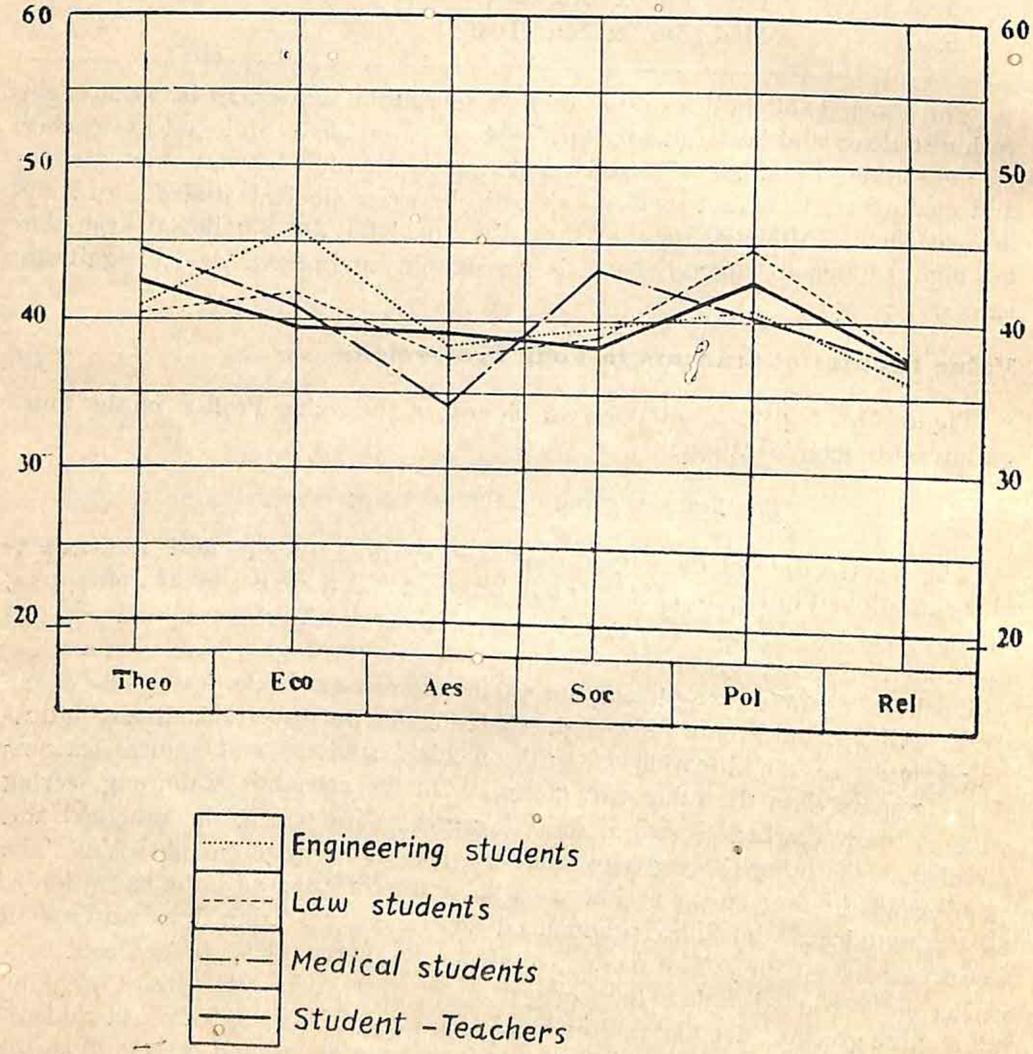
Figure IV. I gives a comparative picture of the value Profiles of the four groups under consideration:

(The figure is given on the next page)

The mean values of the engineering, law, medical students and student-teachers are plotted in Figure IV.I. It will be noted that there is a great overlapping on many of the scales. The distribution of theoretical, economic and political values of all the four groups cluster more towards the higher side of the scale, while those of aesthetic and religious values more towards the lower side of the scale. All the four groups show slight elevation on the theoretical scale indicating interest in the discovery of truth, medical students and student-teachers showing more than the other two groups. On the economic scale, engineering students show marked elevation, reflecting greater interest in the practical and useful than the other three groups, who are near the average on this scale. The trend of all the four curves is similar on the aesthetic scale, with the exception of medical students who show pronounced depression indicating lesser interest in artistic aspects of life. The medical students, however, show pronounced elevation on the social scale reflecting greater interest in love of people than the other three groups. On the political scale the curve of law students and student-teachers are more peaked showing greater interest in power and prestige than the other two groups. It is interesting to note that all the four curves are surprisingly similar on the religious scale. Slight depression of all the four curves indicate lesser interest of all the four groups in religious values.

FIGURE IV. 1

VALUE PROFILES OF ENGINEERING, LAW, MEDICAL STUDENTS AND STUDENT-TEACHERS.



Inter Group Comparison of Values

Table IV. 3

Comparison of Engineering and Law Students on the Study of Values

Values	Eng. Stu.		Law Stu.				
	Mean	S.D.	Mean	S.D.	F*	t	P
Theo	40.26	5.07	40.08	5.76	1.29	0.16	NS
Eco	45.76	6.24	41.18	6.00	1.08	3.69	0.01
Aes	38.60	6.42	37.42	7.41	1.33	0.84	NS
Soc	39.26	5.70	38.89	7.23	1.61*	0.21	NS
Pol	40.12	4.68	44.64	6.51	1.93*	3.96	0.0
Rel	36.14	6.36	37.58	7.40	1.35	1.03	NS

Table IV 3 shows the results of the application of t-test to the differences yielded by engineering students and law students on the Study of Values. It will be observed that engineering students exhibited a significantly higher value on the economic scale than the law students; law students, on the other hand, yielded a significantly higher value on the political scale. In both cases the t-ratio was significant at 0.01 level. On theoretical, aesthetic, social and religious scales no significant difference between the two groups was found.

Table IV. 4

Comparison of Engineering and Medical Students on the Study of Values

Values	Eng. Stu.		Med. Stu.				
	Mean	S.D	Mean	S.D	F	t	P
Theo	40.26	5.07	44.30	4.40	1.33	4.21	0.01
Eco	45.76	6.24	40.70	5.61	1.24	4.22	0.01
Aes	38.60	6.42	34.34	6.48	1.02	3.28	0.01
Soc	39.26	5.70	43.12	6.84	1.44	3.04	0.01
Pol	40.12	4.68	40.06	4.50	1.08	0.06	NS
Rel	36.14	6.36	37.40	6.30	1.02	0.98	NS

* F — * significant at 0.05 level
** significant at 0.01 level

Table IV. 4 shows the results of a comparison of Study of Values between engineering students and the medical students. It will be noted that engineering students yielded significantly higher values in economic and aesthetic scales, while medical students indicated higher values in theoretical and social scales. In all these four values the differences between the two groups were significant at 0.01 level. The two groups did not differ significantly in the political and religious values.

Table IV. 5

Comparison of Engineering Students and Student-Teachers on the Study of Values

Values	Eng. Stu.		Stu. Tea.		F	t	P
	Mean	S.D.	Mean	S.D.			
Theo	40.26	5.07	42.38	6.84	1.82*	1.74	NS
Eco	45.76	6.24	39.82	6.78	1.18	4.50	0.01
Aes	38.60	6.42	38.90	6.54	1.04	0.23	NS
Soc	39.26	5.70	38.74	5.25	1.18	0.47	NS
Pol	40.12	4.68	42.62	5.40	1.33	2.45	0.05
Rel	36.14	6.36	37.54	6.36	1.00	0.85	NS

A comparison of engineering students and student-teachers is found in Table IV. 5. It will be noted that these two groups of professional students differed significantly in only two values, economic in which the engineering students scored significantly higher than student-teachers, the t-ratio being significant at 0.01 level while in political value student-teachers scored significantly higher than the engineering students, the Value of t being significant at 0.05 level. In rest of the values the differences between the two groups were not significant.

Table IV. 6

Comparison of Law and Medical Students on the Study of Values

Values	Law Stu.		Med. Stu.		F	t	P
	Mean	S.D.	Mean	S.D.			
Theo	40.08	5.76	44.30	4.40	1.71*	4.10	0.01
Eco	41.18	6.00	40.70	5.61	1.14	0.41	NS
Aes	37.42	7.41	34.34	6.48	1.31	2.18	0.05
Soc	38.98	7.23	43.12	6.84	1.12	2.91	0.01
Pol	44.64	6.51	40.06	4.50	2.09**	4.05	0.01
Rel	37.58	7.40	37.40	6.30	1.38	0.13	NS

The mean scores of law students and medical students on this test are shown in Table IV. 6. It will be observed that law students exhibited significantly higher values on the aesthetic and political scales than the medical students, while the medical students yielded significantly higher values on the theoretical and social scales. In case of theoretical, social and political values differences between the two groups were significant at 0.01 level, while in case of aesthetic value the difference was significant at 0.05 level.

Table IV. 7

Comparison of Law Students and Student-Teachers on the Study of Values

Values	Law Stu.		Stu. Tea.		F	t	P
	Mean	S.D.	Mean	S.D.			
Theo	40.08	5.76	42.38	6.84	1.41	1.80	NS
Eco	41.18	6.00	39.82	6.78	1.28	1.05	NS
Aes	37.42	7.41	38.90	6.54	1.28	1.05	NS
Soc	38.98	7.23	38.74	5.25	1.90*	0.19	NS
Pol	44.64	6.51	42.62	5.40	1.45	1.67	NS
Rel	37.58	7.40	37.54	6.36	1.35	0.03	NS

The results of the comparison of law students and student-teachers on the Study of Values are found in Table IV. 7. It is interesting to note that no significant difference was found between the two groups on the six value variables. This shows that the two groups are alike in their value orientation.

Table IV. 8

Comparison of Medical Students and Student-Teachers on the Study of Values

Values	Med. Stu.		Stu. Tea.		F	t	P
	Mean	S.D.	Mean	S.D			
Theo	44.30	4.40	42.38	6.84	2.42**	1.65	NS
Eco	40.70	5.61	39.82	6.78	1.46	0.70	NS
Aes	34.34	6.48	38.90	6.54	1.02	3.48	0.01
Soc	43.12	6.84	38.74	5.25	1.70*	3.56	0.01
Pol	40.06	4.50	42.62	5.40	1.44	2.56	0.05
Rel	37.40	6.30	37.54	6.36	1.02	0.11	NS

Results of a comparison of value variables of medical students and student-teachers is found in Table IV. 8. Medical students revealed significantly higher value in social scale, while student-teachers indicated significantly higher values in aesthetic and political scales. In theoretical, economic and religious values no significant differences was found between the two groups.

Intra Value Differences for the Four Groups

When the 't' test was applied to the strength of six value variables within groups a clear hierarchy of values emerged in each group. The following table shows intra value differences of engineering students:

Table IV. 9*

't' Matrix showing Intra Value Differences of Engineering Students

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	4.04**					
Aes	1.30	5.68**				
Soc	0.91	4.85**	0.48			
Pol	0.14	5.17**	1.24	0.72		
Rel	3.35**	7.19**	1.66	2.58*	3.11**	

Ranked on the basis of the magnitude of 't' the significant differences of engineering students are found to fall in the following order:

1. Eco — Rel
2. Eco — Aes
3. Eco — Pol
4. Eco — Soc
5. Eco — Theo
6. Theo — Rel
7. Pol — Rel
8. Soc — Rel

---

* t — * Significant at 0.05 level
** Significant at 0.01 level

This shows that the economic value differs significantly from all the other values and religious from all the other except aesthetic. Other values do not differ significantly from one another. Economic value thus emerges as the highest single value variable, while religious as the lowest. Thus economic and religious values occupy respectively the highest and lowest places in this group, while the other four values namely theoretical, aesthetic, social and political form a separate cluster with no significant difference among them.

Table IV. 10

't' Matrix showing Intra Value Differences of Law Students

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	0.96					
Aes	1.69	2.63*				
Soc	0.80	1.50	0.94			
Pol	3.83**	2.62*	4.94**	3.47**		
Rel	1.67	2.31*	0.10	0.95	4.41**	

The above table shows that in the case of law students the significant differences on the basis of the magnitude of 't', occur as follows:

1. Pol — Aes
2. Pol — Rel
3. Pol — Theo
4. Pol — Soc
5. Eco — Aes
6. Eco — Pol
7. Eco — Rel

It will be observed that in this case political value differs significantly from all other values, while economic value differs significantly from aesthetic, political and religious values. There is no significant difference between the relative strengths of theoretical, aesthetic, social and religious values. Thus two clusters of values emerge clearly: (1) political and economic and (2) theoretical, aesthetic, social and religious. In the case of law students, therefore, political value emerged as the highest value variable, followed by economic value.

Table IV. 11

't' Matrix showing Intra Value Differences of Medical Students

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	4.00**					
Aes	7.78**	5.39**				
Soc	1.01	1.60	5.42**			
Pol	4.51**	0.52	4.97**	2.73**		
Rel	5.48**	2.58*	2.20*	4.00**	2.23*	

Table IV. 11 indicates that in the case of medical students significant differences, as shown by the values of 't' from highest to lowest, fall in the following order:

1.	Theo — Aes	7.	Theo — Eco
2.	Theo — Rel	8.	Soc — Rel
3.	Soc — Aes	9.	Soc — Pol
4.	Eco — Aes	10.	Eco — Rel
5.	Pol — Aes	11.	Pol — Rel
6.	Theo — Pol	12.	Aes — Rel

The 't' Matrix of medical students shows that theoretical and social values do not differ significantly and they are both on the high side. Similarly political and economic values also do not differ significantly from one another, though these students are definitely low on these values as compared to their theoretical and social values. They are the lowest on religious and aesthetic values which between themselves differ significantly at 0.05 level. The aesthetic value is the lowest among medical students. In this way three cluster of values emerge very clearly: (1) theoretical and social (2) Political and economic and (3) Religious and aesthetic. Thus in the case of medical students theoretical value emerged as the highest value variable followed by social value, while aesthetic value emerged as the lowest value variable.

Table IV. 12

't' Matrix showing Intra Value Differences of Student-Teachers

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	1.95					
Aes	2.17*	0.56				
Soc	2.62*	0.79	0.14			
Pol	0.19	2.29*	2.95**	3.13**		
Rel	3.10**	1.50	1.03	1.06	3.76**	

In the case of student-teachers the significant differences, on the basis of the values of 't' are found to occur in the following order:

1. Pol — Rel
2. Pol — Soc
3. Theo — Rel
4. Pol — Aes
5. Theo — Soc
6. Pol — Eco
7. Theo — Aes

The significant differences of student-teachers show that the political value differs significantly from four values namely religious, social, aesthetic and economic and theoretical from three values viz., religious, social and aesthetic. Political value thus emerged as the highest value variable followed by theoretical. The other four values religious, social, aesthetic and economic form a separate cluster with no significant difference among them.

Intra Group Relations in Values

To apply the 't' test for finding intra value differences for the four groups according to the formula of correlated means, the correlations reported in the following matrix were found out:

Table IV. 13*

correlation Matrix of Engineering Students

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	—.45**					
Aes	—.21	—.23				
Soc	—.02	—.28*	—.32*			
Pol	—.02	—.12	—.11	—.31*		
Rel	—.16	—.14	—.34*	.003	—133*	

Table IV. 14

Correlation Matrix of Law Students

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	.04					
Aes	—.41**	—.13				
Soc	—.12	—.23	—.28*			
Pol	.07	—.11	—.10	—.41**		
Rel	—.31*	—.36*	—.17	—.02	—.33*	

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* r – * significant at 0.05 level
  ** significant at 0.01 level

Table IV. 15

Correlation Matrix of Medical Students

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	.19					
Aes	—.37**	.05				
Soc	—.04	—.46**	—.48**			
Pol	—.13	—.51**	—.05	.07		
Rel	—.37**	—.17	—.18	—.18	—.20	

Table IV. 16

Correlation Matrix of Student-Teachers

	Theo	Eco	Aes	Soc	Pol	Rel
Theo						
Eco	.08					
Aes	—.44**	—.50**				
Soc	—.31*	—.29*	.14			
Pol	—.04	.0005	—.12	—.37**		
Rel	—.39**	—.34*	—.05	.07	—.32*	

Since the scores on the six values are interdependent in this test, a high score on one value offsets low scores on others and this tends to produce negative correlations in general. However, in case of engineering students there is a positive association between social-religious values, while in case of law students there is positive relationship between theoretical-economic, and between theoretical-political values. In the case of medical students there is positive relationships between theoretical-economic, between economic-aesthetic and between social-political values. In the case of student-teachers there is positive association between theoretical-economic, economic-political, aesthetic-social and between social-religious values. The degree of correlation in all these cases is near zero or very small. These findings are very much in agreement with those of Allport-vernon-Lindzey who also reported positive associations in two or three cases.[1]

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[1] Allport-Vernon-Lnidzey, *Manual of Study of Values*, p. 10.

Testing of Hypothesis

Table IV. 17

Significant Difference found between different Groups on the Six Value Variables

Sl. No.	Groups Compared	Sig. Diff. found
1	Eng. Stu. & Law Stu.	Eco., Pol.
2	Eng. Stu. & Med. Stu.	Theo., Eco., Aes., Soc.
3	Eng. Stu. & Stu. Tea.	Eco., Pol.
4	Law Stu. & Med. Stu.	Theo., Aes., Soc., Pol.
5	Law Stu. & Stu. Tea.	x x x
6	Med. Stu. & Stu. Tea.	Aes., Soc., Pol.

Table IV. 17 shows that hypothesis (6), that is the values of engineering, law, medical students and student-teachers do not differ from one another, is retained in case of law students and student-teachers where these two groups do not differ significantly on any value variable, while the hypothesis is rejected in case of groups with serial numbers 1, 2, 3, 4 and 6. These groups differ significantly in two or more values.

Discussion of Results

The results derived from the Study of Values indicate that the students preparing for four different professions show some distinguishing characteristics. These characterizations are as follows:

(a) **Engineering Students:** The engineering students placed the highest value upon the economic approach, showing that they are oriented to that which is useful and pragmatic. This interest in the practical and useful seems to be compatible with the nature of work which they have to perform. Engineering is the profession "in which a knowledge of the mathematical and natural sciences gained by study, experience and practice is applied with judgement to develop ways to utilize economically the materials and forces of nature for the progressive well-being of mankind."[1] Next, the relatively high esteem placed on theoretical and political values indicate that they characteristically take a cognitive attitude and are also interested in power and prestige. The low value assessment for the aesthetic approach indicate that they take a lesser interest in the artistic episodes of life. The lowest place given to religious value by this group shows that they take least interest in seeking to unite themselves with the higher reality by withdrawing from life.

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[1] *Twenty-eighth Annual Report* for the year ending Sept. 30, 1960, New York: *Engineers' Council for Professional Development* (29 West 39th St), 1960, p. 16.

(b) **Law Students:** Law Students placed high esteem on the political value indicating that they gain great satisfaction from power, prestige and in having some control over others. Beyond the matter of role expectation however, it is possible that law students may relish control as an end in itself as a way of actualizing their drives for satisfaction. With the ranking of the economic and social values in the second and third places, they are also interested in that which is useful and they take cognitive approach to things. This interest in economic and theoretical value also seems consistent with the nature of the job of the lawyers. However, they placed lesser value on religious and aesthetic approaches.

(c) **Medical Students:** Medical students attached highest importance to the theoretical value indicating that they gain satisfaction from ordering and systematizing knowledge. With the concern indicated by the high social value scores, they also show interest in "love of people". This interest in people is natural for the medical students who are constantly reminded to keep the ideal of service to humanity as their prime consideration. John Morgan aptly remarked "The cultivation of medicine as a science requires an enlarged and benevolent mind"[1]. Economic value is also important to the medical student, while religious and aesthetic values are not given much importance. The lowest value assessment for the aesthetic approach probably indicates that they are least interested in form, harmony and in the artistic aspects of life.

(d) **Student-Teachers**: The major surprise came with regard to the student-teachers who considered the political value as of greatest importance, indicating that they are very much interested in power, prestige and in having some control over others. If further research should result in similar findings we may need to revise some notions about the personality motivation of future teachers. Teacher's interest in politics and power is being mentioned as one of the possible causes of deterioration of educational standard and educationists and political leaders are repeatedly pointing out that the teachers should not take active part in politics. Student-teachers also placed great importance on the theoretical and economic values showing that they are oriented to the "cognitive approach" to things and value that which is useful. The lowest value assessment for the religious approach indicates that religious matter mean little to this group.

Inspite of the fact that each group showed distinguishing value characteristics it will be noted that in most of the value variables strking similarity exists between law students and student-teachers. When the role expectancy of these two groups are examined, factors emerge which point toward a marked similarity of functional requirements. Both groups require "cognitive approach to things". Without taking this approach neither the lawyer can go deep into the problem and make out a case nor the teacher can impart knowledge effectively. Both groups want prestige for the maintenance of their status. Both want to maintain good human relationship and help people in some way or other, law helps people to resolve their disputes while teaching helps people to modify their behaviour through increasing their knowledge and skills. Thus it may be that motivation character of job functions in these two groups are similar enough to include students with similar value orientation.

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[1] John Morgan, *A Discourse upon the Institution of Medical Schools in America*, Baltimore: John Hopkins Press, 1937, p. 58.

These findings cofnorm to those obtained by other investigators. Harris[1] reported that theoretical values are found in students of education, engineering and medicine and political values are significantly high in engineering and law students. Dukes[2] found many statistically significant differences between the values of various academic groups and these differences were in the expected direction. He reported that medical students scored higher than law, business and engineering students on the theoretical and lower than law students on the political. Allport, Vernon and Lindzey[3] also reported high theoretical, economic and political values for engineering students and high theoretical values for medical and education students. Ray Chowdhury[4] found high political value in law students and student-teachers and low religious value in engineering, law and teaching groups.

Summary and Conclusions

In this chapter an attempt has been made to find out and compare values of engineering students, law students, medical students and student-teachers. The Allport-Vernon-Lindzey Study of Values (Indian Adaptation by Dr. K. Ray-Chowdhury) has been used to measure the relative prominence of six evaluative attitudes in personality. This part of the study tested the hypothesis that the values of students in these four professions do not differ from one another.

In a comparison of engineering students with law students, engineering students yielded a significantly higher value on the economic scale, while law students revealed significantly higher value on the political scale. When engineering students and medical students were compared, engineering students exhibited significantly higher values on the economic and aesthetic scales, while medical students yielded significantly higher values on the theoretical and social scales.

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[1] D. Harris, "Group Differences in Values within a University", *Journal of Abnormal and Social Psychology*, 1934, 29, 95-102.

[2] William F. Dukes, "Psychological Studies of Values", *Psychological Bulletin*, 1955, 52, p. 28.

[3] Allport, Vernon and Lindzey, *Study of Values—Manual of Directions*, p. 14.

[4] K. Ray-Chowdhury, *Manual of Directions for the* 1958 *Indian Modification of Allport-Vernon-Lindzey Study of Values*, p. 7.

In comparing engineering students and student-teachers, engineering students were found to have significantly higher scores on the economic value while student-teachers showed significantly higher score on the political value.

The results of the application of t-test to the differences yielded by law students and medical students on the Study of values showed that law students scored significantly higher on the aesthetic and political values, while medical students scored significantly higher on the theoretical and social scales. No significant value differences were found between law students and student-teachers on the six value variables. In a comparison of medical students and student-teachers, medical students revealed significantly higher value in social scale, while student-teachers indicated significantly higher values in aesthetic and political scales.

The results derived from the Study of Values indicate that the students preparing for these four professions show some distinguishing patterns of values. In the case of engineering students economic value emerged as the highest single value variable while religious was the lowest. In the case of law students political value emerged as the highest value variable followed by economic value. In the case of medical students theoretical value was first, followed by social value, while aesthetic value was the lowest. In the case of student-teachers political value emerged as the highest value variable followed by theoretical.

Findings in general lead to the conclusion that differences in values do exist between students preparing for the professions of engineering, law, medicine and teaching. The question whether these students develop these values with training or the students who have such values come to these professions cannot be answered by means of this study alone.

CHAPTER V

PERSONALITY ADJUSTMENT

Meaning of Adjustment

The term "adjustment" appears in diverse uses. Broadly speaking it means that an individual must accommodate himself in order to fit certain demands of his environment. According to Gates "adjustment is a continual process by which a person varies his behaviour to produce a more harmonious relationship between himself and his environment".[1] Thus adjustment shows the extent to which an individual's personality functions efficiently in a world of other people. In this chapter an attempt has been made to study the personality adjustment of students in four professions namely engineering, law, medicine and teaching. Saxena's Adjustment Inventory[2] was used for this purpose. This inventory was preferred because it is in Hindi, it has been standardized in Indian conditions with special reference to U.P., it is suitable for adults and it provides measures for five separate areas permitting location of specific adjustment difficulties. A general description of the test is given below.

Saxena's Adjustment Inventory

Introduction

This adjustment inventory known as Vyaktitva-Parakh-Prashnavali (MA-62) has been constructed and standardized by Dr. M.S.L. Saxena, Department of Psychology, Banaras Hindu University, Varanasi-5. It is similar to one prepared by Bell (Adult Form). Describing the construction of this inventory Saxena says "About 40 percent of the items of the preliminary draft have been borrowed from Bernreuter's Personality Inventory, Cattell's 16 P F Questionnaire, the M M P I, Bell's Adjustment Inventory (Adult Form), and Woodworth's Personal Data Sheet".[3] This inventory is intended for use with school, college and university students, ranging in age from eleven years to adulthood. It seeks to discriminate between well adjusted and poorly adjusted students.

The inventory provides five separate areas of adjustment, namely:

Element A	Home Adjustment
Element B	Health Adjustment

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[1] Gates and Others, *Educational Psychology*, New York: The Macmillan Co., 1950, p. 614.

[2] *Vyaktitva-Parakh-Prashnavali* (*MA*—62), Constructed and standardized by M.S.L. Saxena, Department of Psychology, Banaras Hindu University, Varanasi.

[3] M.S.L. Saxena, "Vyaktitva Parakh Prashnavali, Construction and Standardization of Personality Inventory in Hindi", *Shiksha*, July 1962, 15, No. 1, p. 123.

Element C	Social Adjustment
Element D	Emotional Adjustment
Element E	School (or College) Adjustment

Vyaktitva-Parakh-Prashnavali contains 90 items. The items are in question form and the responses are to be recorded as "Yes" or "?" (doubtful) or "No" on a separate answer sheet. The items come in a random order and the subject does not know that he is responding for a particular area. The inventory is non-timed, easy to administer and quick to score. It takes about 30 to 40 minutes to answer all the questions. It is suitable for use with both the sexes and can be administered to an individual as well as to a group according to the need. A high score on this inventory indicates a superior adjustment while a low score indicates poor adjustment.

Standardization

The inventory has been standardized on a sample of 2529 students of class IX to post-graduate level, both males and females. The sample has been drawn from the students of arts, science, commerce and teacher training courses representing educational institutions of urban, semi-urban, and rural areas of eastern, central and western parts of the state of Uttar Pradesh. The sample has been divided into four age groups and separate norms have been provided for each age group. In all three types of scale norms have been provided in the Test Manual[1] 1) Stanine Norms on raw scores. 2) Norms based on PE units on T-scores. 3) Norms based on SD units on T-score. Tables for converting raw scores into T-scores for each element have also been provided in the manual.

Reliability

Reliability Coefficients of the inventory as obtained by various methods are presented below:

Method	Reliability Coefficient	N
1. Test-retest	.87	122
2. Split-half, corrected with S.B. Prophecy formula	.89	256
3. Rational Equivalence	.90	2529

Reliability coefficients of various elements range from .72 to .86 by the test-re test method and from .57 to .84 by the method of Rational Equivalance as shown below:

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[1] M.S.L. Saxena, Manual for *Vyaktitva Parakh Prashnavali* (MA—62), Department of Psychology Banaras Hindu University, Varanasi—5.

Elements	Rational Equivalance (N: 2529)	Test-retest (N: 122)
Element A	.62	.81
Element B	.69	.79
Element C	.73	.76
Element D	.84	.86
Element E	.57	.72

Validity

The inventory has been correlated with Dr. H.S. Asthana's Adjustment Inventory and it has given a validity coefficient of .80 on a representative sample of 150 students. This inventory has also been validated against the criterion of teachers' estimates of the personality adjustment of their pupils. The criterion in the form of marks was obtained from teachers who lived with students in hostels. The coefficients of correlation between the teacher's marks and the scores obtained on this inventory are as under:

	N	r	Significance
Boys	55	.63	Significant at .01 level
Girls	37	.71	Significant at .01 level

The ability of this inventory to discriminate poor adjustment from good adjustment and to identify problem cases have been detremined. Cross-validation has been carried out on a representative sample of 254 cases.

Applicability

Saxena's Adjustment Inventory has been used in several studies of personality adjustment and has been found to work well with high school and college students and adults. Jai Prakash[1] investigated adjustment of promoted and failed boys in class X through this inventory and found that the promoted students have a satisfactory adjustment while the failed students belong to the category of unsatisfactory adjustment. Jamini Devi[2] also used this inventory to compare the adjustment of girls having received and not having received physical education and reported that girls having received physical education are better adjusted than those who did not have physical education. Shiva Shankar Srivastava[3] studied the relation between personality adjustment and achievement and employed this inventory for the collection of data. He concluded that good adjustment and high academic achievement go hand in hand and poor adjustment and poor achievement are concomitant. In an investigation into the relationship between adjustment and efficiency of teachers using Saxena's Adjustment Inventory, Sharan Mansingh[1] found significant correlations between efficiency and adjustment of teachers. The findings corroborate the belief that efficiency in teaching is very largely determined by the level of adjustment of teachers.

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[1] Jai Prakash, *Adjustment of Promoted and Failed Boys in class* X, Unpublished Master's Dissertation, Allahabad University, 1963.

[2] Jamini Devi, *An Investigation into the Adjustment of Girls having received and not having received Physical Education,* Unpublished Master's Dissertation, Allahabad University, 1964.

[3] Shiva Shanker Srivastava, *A Study of the Relation between Personality Adjustment and Achievement* Unpublished Master's Dissertation, Allahabad University, 1965.

Administration and Scoring

The Adjustment Inventory was administered to the students of four different professional colleges in batches of 20 to 25. Instruction laid down in the Test Booklet as well as in the Manual for the purpose were strictly followed.

The answer sheets of the inventory were scored with the help of five stencil keys provided for scoring, there being a separate key for each element of the inventory. Raw scores for each element were then converted into T-scores with the help of conversion tables provided in the Test Manual. The fourth table for the male students i.e., M^4 which is meant for the age group 20 + and above was used. The T-scores of different elements were added up which gave the level of general adjustment of an individual.

Statistical Procedure

The scores of the four groups under consideration on the General Adjustment as well on the five elements namely Home, Health, Social, Emotional and College were tabulated separately for each group into frequency distributions and Mean and Standard Deviations were calculated. Comparison between different groups were made on the basis of t-test with 5% level of confidence considered significant. Variances were compared for homogeneity before obtaining the value of t, and t-test was modified where significant difference was found in the variances. The modification was applied in the same way as done in the case of the Study of Values. Chi-square as a test of significance was also applied to distinguish different groups on grades of General as well as home, health, social, emotional and college adjustment. The significance levels established in this test were the same as that in the case of t-test.

Analysis of Data*

Engineering students, law students, medical students and student-teachers have been compared with each other on General adjustment as well as on Home, Health, Social, Emotional and College Adjustment scales.

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[1] Sharan Mansingh, *An Investigation into the Relationship between Adjustment and Efficiency of Teachers*, Unpublished Master's Dissertation, Allahabad University, 1965.

* See Appendix A for the data.

General Adjustment

The following table shows the Mean scores, Standard Deviations, F-ratios, t-ratios and significance levels of different groups under consideration on General Adjustment:

Table V. 1

Differentials in General Adjustment

S.No.	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	260.70	31.80	1.22	0.40	NS
	Law stu.	263.44	35.10			
2.	Eng. Stu.	260. 70	31.80	1.08	2.14	0.05
	Med. Stu.	274.14	30.56			
3.	Eng. Stu.	260.70	31.80	1.01	2.64	0.01
	Stu. Tea.	277.70	31.60			
4.	Law Stu.	263.44	35.10	1.32	1.61	NS
	Med. Stu.	274.14	30.56			
5.	Law Stu.	263.44	35.10	1.23	2.11	0.05
	Stu. Tea.	277. 70	31.60			
6.	Med. Stu.	274.14	30.56	1.07	0.57	NS
	Stu. Tea.	277.70	31.60			

The above table clearly indicates that mean general adjustment score of medical students is greater than that of engineering students, the difference between the two means is significant at 0.05 level. When engineering students and student-teachers were compared, student-teachers exhibited a significantly higher score than the engineering students, the difference being significant at 0.01 level. Law students and student-teachers are differentiated in respect of general adjustment at 0.05 level. The mean adjustment score of student-teachers is higher than the mean of law students. The general adjustment scale failed to differentiate the engineering students and law students, law students and medical students and medical students and student-teachers. This indicates the superiority of student-teachers over all other groups on General Adjustment.

Grades of General Adjustment

In order to have a more detailed and clear picture of the relative positions of the various groups in general adjustment, distribution of different groups over seven grades of generaladjustment ranging from "excellent adjustment" to "poor adjustment" have been compared with the help of Chi-square. The results are given in the following table:

Table V. 2

Differentials in Grades of General Adjustment

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	3.48	6	NS
2.	Eng. Stu. & Med. Stu.	8.10	6	NS
3.	Eng. Stu. & Stu. Tea.	9.08	6	NS
4.	Law Stu. & Med. Stu.	5.66	6	NS
5.	Law Stu. & Stu. Tea.	6.36	6	NS
6.	Med. Stu. & Stu. Tea.	4.12	6	NS

Table V. 2 shows that there is no significant difference between any two groups so far as this distribution in grades of General adjustment is concerned. None of the Chi-square reaches the 0.05 level of significance.

The results thus indicate that when mean general adjustment scores were compared, significant differences were found between engineering students and medical students, between engineering students and student-teachers and between law students and student-teachers, but when the distribution of different groups over seven grades of General adjustment were compared no significant difference was found between any two groups under consideration.

Areas of Adjustment

(a) **Home Adjustment:**

Table V. 3

Differentials in Home Adjustment

S.No.	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	53.22	9.60	1.42	0.46	NS
	Law Stu.	52.96	8.04			
2.	Eng. Stu.	53.22	9.60	1.60*	1.28	NS
	Med. Stu.	55.46	7.59			
3.	Eng. Stu.	53.22	9.60	1.29	1.36	NS
	Stu. Tea.	55.70	8.46			
4.	Law Stu.	52.96	8.04	1.12	1.58	NS
	Med. Stu.	55.46	7.59			
5.	Law Stu.	52.96	8.04	1.11	1.64	NS
	Stu. Tea.	55.70	8.46			
6.	Med. Stu.	55.46	7.59	1.24	0.15	NS
	Stu. Tea.	55.70	8.46			

A scrutiny of the above table reveals that there does not exist any significant difference between the mean scores of different groups in Home adjustment, indicating thereby that engineering students, law students, medical students and student-teachers adjust more or less to a similar extent to home.

Table V.4

Differentials in Grades of Home Adjustment

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	6.30	2	0.05
2.	Eng. Stu. & Med. Stu.	0.46	2	NS
3.	Eng. Stu. & Stu. Tea.	0.08	2	NS
4.	Law Stu. & Med. Stu.	4.94	2	NS
5.	Law Stu. & Stu. Tea.	2.02	2	NS
6.	Med. Stu. & Stu. Tea.	0.18	2	NS

When the distribution of different groups over five grades of Home adjustment were compared, engineering students and law students were found to differ significantly at 5% level, while other groups did not differ significantly between themselves on grades of Home adjustment. Considering the distribution of frequencies of differnt groups over five grades of home, health, social, emotional and college adjustment it was found that in a majority of the cases either there were no frequencies in the first or the last grades, i.e., excellent adjustment and very unsatisfactory adjustment or in some cases the frequencies in these categories were very small. To avoid very small expected frequencies, the frequencies of the first and the last grades were combined with the adjacent grades i.e., with good adjustment or unsatisfactory adjustment. In computing Chi-square for the distribution of cases over different areas of adjustment that is, home, health, social, emotional and college, three grade classification has been followed. The distribution of engineering students and law students on grades of home adjustment is given below:

Table V. 5*

	Good	Satis.	Unsat.	Total
Eng. Stu.	25	17	8	50
Law Stu.	17	25	8	50
	42	42	16	100

$X^2 = 6.30$

df = 2

P = 0.05

The difference between the two groups is significant at 0.05 level. The distribution indicates that there are more engineering students on good home adjustment as compared to law students, who are more on satisfactory adjustment, the frequencies of the two groups have been reversed in these two categories. This indicates the superiority of engineering students in the area of home adjustment.

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* Satis. = Satisfactory, Unsat. = Unsatisfactory.

(b) **Health Adjustment**

The results of the comparison of mean scores of different groups on Health adjustment are shown in the Table given below:

Table V. 6

Differentials in Health Adjustment

S. No.	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	50.54	10.17	1.26	1.01	NS
	Law Stu.	52.50	9.04			
2.	Eng. Stu.	50.54	10.17	1.52	1.00	NS
	Med. Stu.	52.42	8.24			
3.	Eng. Stu.	50.54	10.17	1.83*	2.45	0.05
	Stu. Tea.	54.98	7.52			
4.	Law Stu.	52.50	9.04	1.20	0.04	NS
	Med. Stu.	52.42	8.24			
5.	Law Stu.	52.50	9.04	1.44	1.48	NS
	Stu. Tea.	54.98	7.52			
6.	Med. Stu.	52.42	8.24	1.20	1.61	NS
	Stu. Tea.	54.98	7.52			

The above table reveals that in the case of only one group, that of engineering students and student-teachers, there is a significant difference on health adjustment at 0.05 level, the mean scores of student-teachers being greater than that of engineering students. This indicates that the student-teachers are better adjusted in the area of health than the engineering students. Similar result was also obtained when the distribution of different groups on grades of health adjustment were compared, and where these two groups have again been differentiated at 0.05 level. This is shown in Table V. 7.

Table V. 7

Differentials in Grades of Health Adjustment

S.No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	4.32	2	NS
2.	Eng. Stu. & Med. Stu.	5.80	2	NS
3.	Eng. Stu. & Stu. Tea.	7.66	2	0.05
4.	Law Stu. & Med. Stu.	0.36	2	NS
5.	Law Stu. & Stu. Tea.	1.26	2	NS
6.	Med. Stu. & Stu. Tea.	2.68	2	NS

The distribution of engineering studetns and student-teachers on grades of health adjustment is shown in Table V. 8

Table V.8

	Good	Satis.	Unsat.	Total
Eng. Stu.	16	17	17	50
Stu. Tea.	26	18	6	50
	42	35	23	100

X^2 = 7.66
df = 2
P = 0.05

On an application of Chi-square in the above distribution it has been found that there exists a significant difference between engineering students and student-teachers at 0.05 level. The above table shows that the student-teachers cluster more on good health adjustment, while engineering students cluster more on satisfactory and unsatisfactory health adjustment. This indicates that student-teachers are better adjusted in respect of health than the engineering students.

(c) **Social Adjustment**

The results of the comparison of different groups under consideration on social adjustment scale are found in the following table:

Table V. 9

Differentials in Social Adjustment

S. No.	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	52.52	8.79	1.34	0.61	NS
	Law Stu.	53.70	10.16			
2.	Eng. Stu.	52.52	8.79	1.30	2.05	0.05
	Med. Stu.	55.94	7.72			
3.	Eng. Stu.	52.52	8.79	1.12	3.21	0.01
	Stu. Tea.	58.08	8.31			
4.	Law Stu.	53.70	10.16	1.73*	1.23	NS
	Med. Stu.	55.94	7.72			
5.	Law Stu.	53.70	10.16	1.49	2.34	0.05
	Stu. Tea.	58.08	8.31			
6.	Med. Stu.	55.94	7.72	1.16	1.32	NS
	Stu. Tea.	58.08	8.31			

It will be observed that in social adjustment three groups have been differentiated. Comparison of mean social adjustment scores of engineering students and medical students indicated that the mean scores of medical students was higher than the engineering students and the difference was significant at 5% level. In comparing engineering students and student-teachers it was found that student-teachers were significantly superior. The difference between the two means was significant at 1% level. Law students and Student-teachers also differed significantly with regard to social adjustment, the mean score of student-teachers was greater than that of law students. The other three groups with serial numbers 1, 4 and 6 did not differ significantly on this scale.

Table V. 10

Differentials in Grades of Social Adjustment

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	0.82	2	NS
2.	Eng. Stu. & Med. Stu.	5.44	2	NS
3.	Eng. Stu. & Stu. Tea.	10.04	2	0.01
4.	Law Stu. & Med. Stu.	3.10	2	NS
5.	Law Stu. & Stu. Tea.	5.44	2	NS
6.	Med. Stu. & Stu. Tea.	2.60	2	NS

When frequencies of the six groups under consideration in the grades of social adjustment were compared, a significant difference was found in case of engineering students and student-teachers beyond 0.01 level. Groups with serial numbers 2 and 5 have Chi-square values of 5.44 which is sufficiently nearer to the 5% significance point (5.99). Hence it appears that these two groups could also be differentiated in grades of social adjustment. The distributions of engineering students and student-teachers on grades of social adjustment are given in the table below:

Table V. 11

	Good	Satis.	Unsat.	Total
Eng. Stu.	11	28	11	50
Stu. Tea.	26	19	5	50
	37	47	16	100

X^2 = 10.04
df = 2
P = 0.01

The Chi-square value obtained here indicates that engineering students and student-teachers differ significantly beyond 1% level. It is evident from the table that there are more student-teachers in the category of good social adjustment as compared to engineering students, who are more in the category of satisfactory adjustment, indicating that the student-teachers are socially better adjusted than the engineering students.

(d) **Emotional Adjustment**

Table V. 12 shows the results of t-test to the differences yielded by different groups on the emotional adjustment scale.

Table V. 12

Differentials in Emotional Adjustment

S. No.	Groups Compared	Means	S. D.	F	t	P
1.	Eng. Stu.	52.86	8.46	1.07	0.39	NS
	Law Stu.	53.54	8.76			
2.	Eng. Stu.	52.86	8.46	1.25	1.57	NS
	Med. Stu.	55.70	9.45			
3.	Eng. Stu.	52.86	8.46	1.09	1.62	NS
	Stu. Tea.	55.56	8.10			
4.	Law Stu.	53.54	8.76	1.16	1.17	NS
	Med. Stu.	55.70	9.45			
5.	Law Stu.	53.54	8.76	1.17	1.19	NS
	Stu. Tea.	55.56	8.10			
6.	Med. Stu.	55.70	9.45	1.36	0.08	NS
	Stu. Tea.	55.56	8.10			

It is evident from the above table that none of the six groups under consideration differed significantly on emotional adjustment scale. The t-values did not reach 5% level of significance. This shows that engineering students, law students, medical students and student-teachers are alike in respect of emotional adjustment.

The results of the t-test are corroborated by the application of Chi-square in the distributions of various grades of emotional adjustment as shown in Table V. 13, where no value of Chi-square was significant at 5% level.

Table V. 13

Differentials in Grades of Emotional Adjustment

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	0.04	2	NS
2.	Eng. Stu. & Med. Stu.	2.26	2	NS
3.	Eng. Stu. & Stu. Tea.	4.24	2	NS
4.	Law Stu. & Med. Stu.	1.64	2	NS
5.	Law Stu. & Stu. Tea.	3.40	2	NS
6.	Med. Stu. & Stu. Tea.	0.38	2	NS

(c) **College Adjustment**

Table V. 14 gives Mean, Standard Deviation, F, t, and P of the six groups under consideration on college adjustment.

Table V. 14

Differentials in College Adjustment

S. No.	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	51.70	7.53	1.68*	0.07	NS
	Law Stu.	51.82	9.76			
2.	Eng. Stu.	51.70	7.53	1.03	1.14	NS
	Med. Stu.	53.42	7.40			
3.	Eng. Stu.	51.70	7.53	1.38	1.13	NS
	Stu. Tea.	53.58	8.85			
4.	Law Stu.	51.82	9.76	1.74*	0.91	NS
	Med. Stu.	53.42	7.40			
5.	Law Stu.	51.82	9.76	1.22	0.94	NS
	Stu. Tea.	53.58	8.85			
6.	Med. Stu	53.42	7.40	1.43	0.10	NS
	Stu. Tea.	53.58	8.85			

The inspection of Table V. 14 indicates that none of the groups under consideration differ significantly on college adjustment. This suggests that there is no marked difference between engineering students, law students, medical students and student-teachers in their adjustment to academic setting. This conclusion is also drawn when these groups were compared in regard to the grades of college adjustment. No Chi-square value reaches the 5% level of significance as will be evident from the Table given below:

Table V. 15

Differentials in Grades of College Adjustment

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	0.98	2	NS
2.	Eng. Stu. & Med. Stu.	0.56	2	NS
3.	Eng. Stu. & Stu. Tea.	4.00	2	NS
4.	Law Stu. & Med. Stu.	3.22	2	NS
5.	Law Stu. & Stu. Tea.	2.60	2	NS
6.	Med. Stu. & Stu. Tea.	4.34	2	NS

Testing of Hypothesis

Analysis of data shows whether Hypothesis No. (9), that is, the groups under consideration show no difference between themselves in their adjustments, both general and in different areas, namely, home, health, social, emotional and college, is retained or rejected. The respective positions are given below:

General Adjustment

Hypothesis is retained in case of Eng. Stu. & Law Stu., Law Stu. & Med. Stu. and Med. Stu. & Stu. Tea., whereas it is rejected in case of Eng. Stu. & Med. Stu., Eng. Stu. & Stu. Tea., and Law Stu. & Stu. Tea.

Home Adjustment

Hypothesis is retained in case of all the groups under consideration.

Health Adjustment

Hypothesis is retained in case of all the groups except Eng. Stu. & Stu. Tea., where a significant difference was found between them.

Social Adjustment

Hypothesis is retained in case of three groups namely Eng. Stu. & Law Stu., Law Stu. & Med. Stu. and Med. Stu. & Stu. Tea., whereas it is rejected in case of other three groups i.e., Eng. Stu. & Med. Stu., Eng. Stu. & Stu. Tea., and Law Stu. & Stu. Tea.

Emotional Adjustment

Hypothesis is retained in case of all the groups.

College Adjustment

Hypothesis is again retained in case of all the six groups under consideration.

Discussion

The analysis of data reported in Table V.1 has revealed that Engineering Students & Medical Students, Engineering Students and Student-Teachers and Law Students and Student-Teachers have been differentiated on General Adjustment scale. All the comparisons made in this Table indicates the overall superiority of Student-Teachers on this scale. This superiority of student-teachers on general adjustment is very much in line with the role that they have to play as teachers. In no other profession the need for good general adjustment and sound mental health are so important as in the profession of teaching. On the basis of research evidence Bowers and Soar[1] have proved that "skilful interaction with pupils requires on the part of the teacher, responsibility, and depth of affective relationship, it requires that he be well enough adjusted that much of his energy is not drained off in dealing with his own intrapersonal tensions, and he must be able to perceive himself and others clearly and represent himself honestly in communication with others". Comparison of the distribution of the groups under consideration over seven grades of general adjustment showed that there is no marked difference between them in this distribution. A large majority of cases in each group were placed in the categories of good and satisfactory general adjustment.

Scrutiny of the data reveals that there is no significant difference between the groups under consideration on the Home Adjustment. This indicates that engineering students, law students, medical students and student-teachers adjust more or less in a similar way to the Home. However, comparison of different groups over grades of home adjustment showed that engineering students and law students differed significantly, engineering students being better placed than the law students over this distribution. Being academically superior engineering students might be getting more attention and care at home than the law students and hence feel themselves better adjusted in the area of home.

As regards Health adjustment, only one group, that is engineering students and student-teachers has been differentiated, the mean score of student-teachers being higher than the engineering students. Similar result was also obtained when the distribution of different groups on grades of health adjustment were compared. Significant difference was again found between these two groups. Student-teachers were found to cluster more on good health adjustment while engineering students cluster more on satisfactory and unsatisfactory health adjustment. This shows the superiority of student-teachers over Engineering students on health adjustment. Engineering education is physically much more strenuous than the teacher education and demands better physique and stamina on the part of the students preparing for the profession of engineering. Probably majority of the engineering students find it difficult to adjust to this type of work and hence are not well adjusted in the area of health.

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[1] Norman D. Bowers and Robert S. Soar, "The Influence of Teacher Personality on Classroom Interaction", *Journal of Experimental Education*, 1962, 30, No. 4.

The most discriminating adjustment index was the social scale, in which three groups have been differentiated, medical students scored significantly higher than the engineering students, student-teachers were significantly superior than the engineering students and the mean score of student-teachers was significantly higher than the law students. The picture that emerges from all the comparisons made in Table V.9 indicated the overall superiority of student-teachers on social adjustment. Most of the student-teachers are academically inferior to students of other groups, but on the social adjustment they are found to be superior. This may be due to the fact that academically bright students concentrate more on individual accomplishments in the academic field and so do not bother much about ensuring good social adjustment while the student-teachers who are low in achievement might have been so because they have been participating more in the social life or use social intercourse as a compensatory device for their low academic achievement.

Comparison of different groups under consideration on Emotional adjustment indicated that the groups did not differ significantly on this scale. This shows that engineering students, law students, medical students, and student-teachers are alike in their emotional adjustment. Majority of the students of each group belonged either to the category of satisfactory adjustment or good emotional adjustment. It can therefore, be concluded that large majority of students of all the four groups are emotionally well adjusted.

Table V. 14 indicated that the groups under consideration differed very little with regard to their adjustment to academic setting. No significant difference between the groups was found on college adjustment. The distribution of students in the four professions over grades of college adjustment revealed that majority of the students in the four groups belonged to the category of satisfactory and unsatisfactory college adjustment while very few were placed in the categories of good and excellent adjustment. This might be due to the fact that these four types of professional colleges probably have similar type of college environment which is not liked by the students in general. The investigator's contact with the students of these four colleges revealed that the students did not like the rather supressive, compulsive and binding nature of activities as well as the 'fear-laden' relationship between the teacher and the taught which exists in these colleges.

Summary and Conclusions

In this chapter an attempt has been made to find out and compare the adjustments of students in four professions. Saxena's Adjustment Inventory which provides measures of general adjustment as well as home, health, social, emotional and college adjustment was used in this study.

The analysis has revealed that three groups have been differentiated on the general adjustment scale, i.e., Eng. Stu. & Med. Stu., Eng. Stu. & Stu. Tea., and Law Stu. & Stu. Tea. The picture that emerged from all the comparisons on this scale indicated the overall superiority of student-teachers on general adjustment.

Regarding the home adjustment no significant difference between the different groups under consideration has been found. However, comparison of different groups over grades of home adjustment showed that the engineering students were better placed than the law students over this distribution.

The analysis of health adjustment points out that only one group that is engineering students and student-teachers were differentiated on this scale, the mean score of student-teachers being higher than the engineering students. Similar results were also obtained when the distribution of different groups on grades of health adjustment were compared.

Social adjustment scale was found to be the most discriminating area in which three groups have been differentiated, medical students scored significantly higher than the engineering students, student-taechers were found to be significantly superior than the engineering students, and the student-teachers scored significantly higher than the law students. The analysis of data reveals the overall-superiority of student-teachers on social adjustment scale.

No difference between the groups under consideration exists in respect of emotional and college adjustment.

In a nutshell it can be stated that the measurement of Home adjustment, Emotional adjustment and College adjustment did not reveal any group difference. In the General Adjustment and Social adjustment student-teachers were found to be superior than the other groups.

CHAPTER VI

BASIC STRUCTURE OF PERSONALITY

Assessment of Personality Structure

In this chapter an attempt has been made to study the personality structure of students preparing for the professions of engineering, law, medicine and teaching through the Rorschach Ink-Blot Test. This is one of the important projective tests to assess the basic structure of personality. According to Bleuler[1] "the Rorschach test mirrors to a high degree the lasting structure of personality". A brief description of the test is given in the following pages.

The Rorschach Ink-Blot Test

Introduction

The Rorschach Ink-Blot Test named after Hermann Rorschach, a Swiss psychiatrist, is in the use since 1921. This test, has in recent years, become the best known and most widely used projective method for the measurement of personality. An enormous amount of literature is available on the Rorschach test. The Fifth Mental Measurements Yearbook[2] lists 2, 297 publications on the Rorschach test alone upto 1959.

Rorschach test has often been criticised strongly by psychologists (Burt-1945, Cattell-1948, Eysenck-1947) who are in favour of applying rigorous statistical methods to test validation. Harrison[3], however claims that rigid validation procedures may be applicable to cognitive aspects of the personality but not the affective aspects. He maintains that "there must be sacrifice of objectivity and spurious precision with more reliance being put upon insight and ingenuity in the forging of tools for personality investigation". Similarly Hertz[4] pointed out that strict application of statistics can be of great disservice to the Rorschach test which is essentially a qualitative method though applying quantitative procedure to its qualitative subject matter.

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[1] M. Bleuler, "After Thirty Years of Clinical Experince with the Rorschach Test", *Rorschachiana*, 1952, Vol. I, No. 1.

[2] Oscar Krishen Buros (Ed), *The Fifth Mental Measurements Yearbook*, New Jersey: The Gryphon Press, 1959.

[3] R. Harrison, "The Thematic Apperception and Rorschach Methods of Personality investigation in Clinical Practice". *Journal of Psychology*, 1943, 15, 49-74.

[4] M.R. Hertz, "Validity of the Rorschach Method", *American Journal of Orthopsychiatry*, 1941, p. 515.

Many eminent psychologists have pointed out the significance of this test. Some views are given below: Thurstone says, "Rorschach has come to occupy a unique position among the many hundreds of tests that are being used by the psychological profession". According to Rapaport[2] "to-day this test (Rorschach) still stands as the most useful tool of its kind, and as the most widely used tool in diagnostic personality testing". Vernon stated,[3] "no test gives so much information about personality including intelligence in so short a time as Rorschach".

Mons[4] remarked, "the aim of Rorschach is to give an impression of the total personality". Piotrowski[5] pointed out, that, "it contributes to the understanding of personality patterns". In the opinion of Beck[6] "Rorschach test has been evolved into a psychological technique of great importance for the normal and intact whole personality in its developmental shifting of activities to higher functional levels". Klopfer[7] stated, "Rorschach will enable the subject to optimally reveal his individuality of functioning". According to Sargent[8] "the test (Rorschach) offers a means not only for appraising capacity, both intellectual and emotional, but for analysing the way in which capacity is used in problem solving, in adaptation and in control of thinking and impulse".

Test Material

The Rorschach Test consists of a set of ten standardized cards, on each of which is a symmetrical inkblot. Five of these inkblots are in black and white with differently shaded areas, two contain black and white adding brilliant scarlet and three are in various shades of colour. Since Rorschach is a culture free test, the original Rorschach Cards[9] were used in this study. These cards are serially numbered from I to X and are presented to the subjects strictly in this order. The order of presentation is considered important because "the sequence of the cards has been given special thought, and the character of each stands

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[1] L.L. Thurstone, "The Rorschach in Psychological Science", *Journal of Abnormal and Social Psychology*, 1948, 43, p. 471.

[2] D. Rapaport and M. Gill, *Diagnostic Psychological Testing*, Vol. II, Chicago: Year Book Publishers, Inc., 1946, P. 85.

[3] P.E. Vernon, "The Significance of the Rorschach Test", *British Journal of Medical Psychology*, 1935, 15, 199-217.

[4] W. Mons, *Principles and Practice of the Rorschach Personality Test*, London: Faber & Faber, Ltd., 1950, p. 13.

[5] Z.A. Piotrowski, *Perceptanalysis*, New York: The Macmillan Company, 1975, p. viii.

[6] S.J. Beck, *Rorschach Test*, Vol. II, New York: Grune and Stratton, Inc., 1949, p. vii.

[7] Brune Klopfer and Others, *Developments in the Rorschach Technique*, Vol. I, New York: World Book Company, 1954, p. 3.

[8] Helen Sargent, Review of the Rorschach Test, In the *Fourth Mental Measurements Yearbook*, p. 214.

[9] Hermann Rorschach, *Psychodiagnostics, Tafeln-Plates*, Bern, Switzerland, Hans Huber, 1921 (renewed 1948)

in relation to precursor and successor[1]". Each Card has a 'primary position', the easiest way of holding it, and it is presented to the subject in this position.

Reliability

A review of the literature discloses scarcity of data on the reliability of the method. Some studies, in which statistical evidence of the findings are available, are being mentioned here. Eichler[2] used two parallel series of cards, the Rorschach and the Behn-Rorschach and determined correlations between the two. For the total number of responses the correlation was about .70 and for separate scoring categories from .56 to .65. Comparable figures were also obtained by Meadows[3] for main score components. Vernon,[4] Datel and Gengerelli[5] and Hertz[6] employed split-half method to estimate reliability of the test. Correlation in these studies ranged from approximately .54 to .95. Test-retest method, using the same cards on two or more occasions, has also yielded substantial correlations. Swift[7] retested school childern at an interval of fourteen days and found that the coefficient varied from .59 to .83 for the several scoring categories. In four repeated Rorschach administrations Kaplan and Berger[8] found coefficient of concordance to vary from .37 to .65. Scorer reliability of the test has been studied by Sicha and Sicha[9] and they found about 75 percent agreement for independent scorers. In Lisansky's[10] study when twenty five records were matched with interpretations using six judges, the average coefficient of contingency was .87. On the basis of these studies the Rorschach test may be said to be a fairly reliable instrument. Discussing the reliability of the test Hertz[11] concluded, "statistical treatment of the results obtained with the Rorschach test in its modified and standardised form shows the test to be a reliable instrument".

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[1] W. Mons, *Principles and Practice of the Rorschach Personality Test,* op. cit., p. 18.

[2] R.M. Eichler, "A Comparison of the Rorschach and Behn-Rorschach Ink-blot Test", *Journal of Consulting Psychology,* 1951, 15, 185-189.

[3] A.W. Meadows, An Investigation of the Rorschach and Behn Tests, cited in H.J. Eysenck, *The Scientific Study of Personality,* New York: Macmillan, 1952.

[4] P.E. Vernon, "The Rorschach Ink-blot Test, *British Journal of Medical Psychology,* 1933, 13, 179-200.

[5] W.E.Datel and J.A. Gengerelli, "Reliability of Rorschach Interpretations", *Journal of Projective techniques* 1955, 19, 372-381.

[6] M.R Hertz, "Current Problems in Rorschach Theory and Technique, *Journal of projective Techniques,* 1951, 15, 307-338.

[7] J.W. Swift, "Reliability of Rorschach Scoring Categories with Preschool Children", *Child Development,* 1944, 15, 207-216.

[8] Bert Kaplan and Stanley Berger, "Increments and Consistency of Performance in Four Repeated Rorschach Administrations", *Journal of Projective Techniques,* 1956, 3, 304-309.

[9] K. Sicha and M. Sicha, "A Step Towards the Standardization of the Scoring of the Rorschach Test", *Rorschach Research Exchange*", 1936-37, 1, 95-101.

[10] E.S. Lisansky "The Interexaminer Reliability of the Rorschach Test", *Journal of Projective Techniques,* 1956, 20, 310-317.

[11] M.R. Hertz, "The Reliability of the Rorschach Ink-blot Test", In Michael Hirt (Ed), *Rorschach Science,* New York: The Free Press of Glencoe, 1962, p. 308.

Validity

Inspite of great difficulties in finding validity, many attempts have been made to establish the validity of the Rorschach test and different methods have been employed for the same. In studies revolving around identified groups, Cox and Sarason[1] and Allen, Stiff and Rosenzweig[2] found reasonably satisfactory validity for this test. Siegal[3] compared Rorschach diagnosis with clinical diagnosis and there was essential agreement in 62 percent of the cases before psychotherapy and 89 percent of the cases after one year. Vernon[4] and Krugman[5] used matching method and found average contingency coefficients of .83 and .85 respectively. Rorschach reports obtained before and after psychoanalytic treatment were compared by Rioch[6] and significant change in Rorschach records was found in all the cases. The method of global judgment was investigated by Chambers and Hamlin.[7] They sent a set of five scored Rorschach protocols to each of twenty well qualified judges to assign them to five different kinds of diagnosis. Global diagnosis was found to have nonchance validity. A number of separate variables have also been studied in relation to selected aspects of behaviour and Rorschach's hypotheses have been confirmed. Bandura's[8] study of white space response, Singer and Jack's[9] study of human movement response and Mann's[10] study of one of the most subtle ratios, M : Sum C are examples of such studies. Thus there is sufficient evidence to prove that Rorschach is a valid instrument for the appraisal of personality in the hands of trained and experienced psychologists.

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[1] F.N. Cox and S.B. Sarason, "Test Anxiety and Rorschach Performance", *Journal of Abnormal and Social Psychology*, 1954, 49, 371-377.

[2] R.M. Allen, M. Stiff and M.I. Rosenzweig, "The Role of Colour in Rorschach Test: a preliminary study of Neurotic and Psychotic Groups", *Journal of Clinical Psychology*, 1953, 9, 81-83.

[3] M.G. Siegal, "The Diagnostic and Prognostic Validity of the Rorschach Test in a Child Guidance Clinic", *American Journal of Orthopsychiatry*, 1948, 18, 119-133.

[4] P.E. Vernon, "The Significance of the Rorschach Test", *British Journal of Medical Psychology*, 1935, 15, 199-217.

[5] J.I. Krugman, "A Clinical Validation of the Rorschach with Problem Children", *Rorschach Research Exchange*, 1942, 5, 61-70.

[6] M.J. Rioch, "The Use of the Rorschach Test in the Assessment of Change in Patients under Psychotherapy", *Psychiatry*, 1949, 12, 427-434.

[7] G.S. Chambers and R.M. Hamlin, "Rorschach 'Inner Life' Capacity of Imbeciles under varied Conditions", *American Journal of Mental Deficiency*, 1957, 62, 88-95.

[8] A. Bandura, "The Rorschach White Space Response and Oppositional Behaviour", *Journal of Consulting Psychology*, 1954, 18, 17-21.

[9] J.L.Singer and H. Jack. "Motor and Fantasy Correlates of Rorschach Human Movement Response", *Journal of Consulting Psychology*, 1954, 18, 325-331.

[10] Lester Mann, "The relation of Rorschach indices of Extratension and Introversion to a measure of Responsiveness to the Immediate Environment", *Journal of Consulting Psychology*, 1956, 20, 114-118.

Applicability

The Rorschach test has been used in almost every conceivable situation requiring the personality appraisal of individuals. It has been used in clinical diagnosis, child guidance, vocational selection and college counselling. It has been administered to individuals and groups in varied settings such as schools, colleges, industrial concerns, military organizations, clinics and hospitals. According to Piotrowski[1] "Rorschach test is widely used in clinical diagnosis, has been introduced in the armed services for research and diagnostic purposes and has been applied to a variety of problems including psychopathology, developmental psychology and recently to vocational guidance, not to mention innumerable other problems of personality research". Rorschach test has also been extensively used in the study of personality and occupations. Williams and Kellman[2] have given a comprehensive list of professional fields in which Rorschach test has been used. The list together with the investigator's surname and year is given below:

Accountants (Kaback-1946)
Administrators and Executives (Kurtz-1948), (Rieger-1949)
Advertising copy writers (Steiner-1949)
Anthropologists (Roe-1952)
Artists, Commercial & Creative (Harrower-1942), (Prados-1944)
Biologists (Roe-1949)
Clerical workers (Rieger-1949), (Kates-1950)
Clergymen (Harrower and Cox-1942)
Draftsmen, designers (Rorschach-1932)
Engineers (Harrower and Cox-1942), (Rieger-1949), (Steiner-1952)
Insurance Personnel (Kurtz-1948), (Mehr-1949)
Machinists (Piotrowski-1944), (Anderson-1949)
Medical technologists (Harrower-1942)
Military Personnel (Bigelow-1940), (Super-1944), (Guilford-1946), (Abt-1947), (Gibb-1949)
Motor coach operaters (Ruch-1948), (Kellman -1953)
Multiform uses (Weider-1947)
Musicians (Harrower and Cox-1942)
Nurses (Gardner-1936)
Paleontologists (Roe-1946)
Personnel Technicians (Kellman-1946), (Rieger-1949)

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[1] Z. Piotrowski, "Use of Rorschach in Vocational Selection", *Journal of Consulting Psychology*, 1943, 7, 97-102.

[2] Gertha Williams and Samual Kellman, "The Rorschach Technique in Industrial Psychology", In Klopfer and Others, *Developments in the Rorschach Technique*, Vol. II, New York: Harcourt Brace & World Inc., 1956, p. 547.

Pharmacists (Kaback-1946)
Physical Scientists (Harrower & Cox-1942), (Roe-1950)
Psychologists (Morris-1950), (Kelly & Fiske-1951), (Roe-1952)
Sales Personnel (Cox-1948), (Kellman-1950)
Social Workers (Harrower & Cox-1942)
Stenographers, Secretaries (Steiner-1953)
Supervisors, Junior executives (Balinsky-1944), (Kurtz-1948)
Teachers (Blair-1946)

Training Programme

Apprentice Mechanics (Piotrowski-1944)
Aviation Cadets (Bigelow-1940), (Ross-1943)
Clinical Psychologists (Morris-1950), (Kelly & Fiske-1951)
Commercial Artists (Anderson and Munroe-1948)
Engineers (Roe-1946)
Medical Students (Molish & Molish-1950)
Psychiatric Residents (Holt & Luborsky-1952)
Student Teachers (Hessel & Travers-1952)

Administration

All the subjects were tested individually by the investigator himself. The test was administered in a room of the college hostel set aside for this purpose. Conditions favourable and necessary for testing were provided. The following instructions were given in the case of each and every subject:

> "I am going to show you a series of ink-blots. They were made by dropping ink on a piece of paper and folding it to make some kind of pattern. I want you to tell me what you can see in them. You may turn the card any way you like; tell me as many things as you can make out, and when you cannot see any more, hand the card back to me. I shall give you another card".

Recording of Responses: All the responses were recorded verbatim on the Record Sheet[1] specially prepared for this purpose. A record was kept of the time of first response to each inkblot (reaction time), total time for all the responses to each card, total time for all the ten cards, position in which the subject held the card for each response and other observations regarding the subject's behaviour.

Inquiry and Testing the Limits: The inquiry was conducted at the end of the test proper. The cards were presented to the subject in the reversed order, beginning with the tenth. The examiner took particular pains to secure a thorough inquiry into the features of the blot which elicited the subject's responses.

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[1] See Appendix B.

The locations were marked and numbered in the outline of the blots. Probing and suggestive questions were avoided. In cases where needed inquiry was followed by testing the limits, in which further inquiry was made regarding the characteristics of the blot not perceived by the subject.

Scoring and Interpretation

Besides Rorschach himself, a number of authorities have developed their own systems of scoring and interpretation. Among the important ones are those of Hertz (1938), Klopfer and Kelly (1942), Beck (1944-45), Rapaport (1946), Mons (1950), Phillips and Smith (1953), Schafer (1954), Sarason (1954), Klopfer and Others (1954), and Piotrowski (1957). Regarding the scoring systems Bell[1] says "While there is an encouraging uniformity in the acceptance of the majority of symbols, especially those which have a direct basis in the work of Rorschach, there is a considerable variety in the definition of some of the concepts implied in them. There is also much discrepancy among the scoring practices of various workers." In the present investigation the author followed the scoring and interpretation technique developed by Klopfer and Others,[2] Klopfer's method offers the latest and most complete description of the Rorschach technique.

Each response was scored on the right hand margin of the Record Sheet for Location, Determinant, Content, Popularity-Originality and Form Level Rating. Then the scores were tabulated on the Individual Record Blank developed by Klopfer and Davidson,[3] and calculations were made to determine percentages and relationships among factors. Brief explanation of the main scoring symbols used in this study is given below:

Location

W – Whole blot
D – Large usual detail
d – Small usual detail
Dd – Unusual detail, or unusual combinations of usual areas
S – White space

Determinants

M – Figures in human-like action
FM – Animals in animal-like action
m – Abstract or inanimate movement
k – Shading as three dimensional expanse projected on a two dimensional plane.

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[1] J.F. Bell, *Projective Techniques*, New York: Longman's Green & Co., 1948.

[2] Klopfer and Others, *Developments in the Rorschach Technique*, op.cit.

[3] Brune Klopfer and H.H. Davidson, *The Rorschach Method of Personality Diagnosis: Individual Record Blank*, New York: World Book Company, 1942.

K – Shading as diffusion
FK – Shading as three dimensional expanse in vista or perspective
F – Form only, not enlivened
Fc – Shading as surface appearance or texture, differentiated
c – Shading as texture, undifferentiated
C^1 – Achromatic surface colour
FC – Definite form with bright colour
CF – Bright colour with indefinite form
C – Colour only

Popularity-Originality

P – Popular responses
O – Original responses

Sum C

$$\text{Sum C} = \frac{FC + 2CF + 3C}{2}$$

Content

H – Human figures
Hd – Parts of human figures, not anatomical
A – Animal figures
Ad – Parts of living animals
And Others

The Rorschach Rating Scale

The investigator prepared a comprehensive Rorschach Rating Scale[1] to deduce five important aspects of personality from the configurational picture of the Rorschach record. These aspects are: (1) Intellectual level (2) Control (3) Creative potential (4) Introversive-Extratensive balance and (5) Level of aspiration. According to Klopfer and Kelley[2] Intellectual level, Control, Creative or imaginative capacity and Introversive-Extratensive balance are important structural components of personality. In addition, a fifth dimension namely Level of aspiration has also been included in the scale, which "gives an indication of the extent to which the individual is able to mobilise his creative or productive energies to back up his intellectual interests and ambitions".[3] A brief description of the Rating Scale is given in the next page.

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[1] See Appendix B.
[2] B. Klopfer and D.M. Kelley, *The Rorschach Technique*, New York: World Book Company, 1942, p. 196.
[3] Klopfer and Others, op. cit., p. 302.

I. Intellectual Level

For estimating Intellectual level seven aspects of Rorschach performance were considered: (i) Highest Form Level Rating, which gives an indication of the upper limits of Intellectual Capacity (ii) Average Form Level Rating, which indicates the level of efficiency of Intellectual function (iii) Quantity and quality of M responses (iv) Quantity and quality of W responses (v) Quantity and quality of O responses (vi) Variety of Content and (vii) Succession. Separate Rating Scales for each of these aspects were prepared in accordance with the suggestions given by Klopfer and Others[1] as described in the following pages.

(i) Intellectual Capacity

According to Klopfer and his associates highest form level obtained gives an indication of the level of capacity or potentiality. They suggest that "even one response of Form level 4.0 indicates very superior capacity, Form level 3.0 indicates superior capacity and Form level 2.0 indicates average to slightly above average capacity".[2] On the basis of these suggestions a Form level rating of 4.0 and above was given a score of 5, 3.0 and above a score of 4, 2.0 and above a score of 3, 1.0 and above a score of 2 and 0.9 and below a score of 1.

(ii) Intellectual Efficiency

The average Form level rating was considered by Klopfer and his collaborates as an indicator of intellectual efficiency. They pointed out that "very superior intellectual efficiency is indicated by an average Form level above 2.0, an above average or superior level of function is indicated by an average weighted Form level of 1.5 to 1.9 and an average weighted Form level from 1.0 to 1.4 represented the average and higher average level of function". In preparing rating scale for intellectual efficiency these criteria were taken into consideration. An average Form level 2.0 and above was given a score of 5, 1.5 to 1.9 a score of 4, 1.0 to 1.4 a score of 3, 0.5 to 0.9 a score of 2 and 0.0 to 0.4 a score of 1.

(iii) Quantity and Quality of M

Rorschach believed that among normals the number of human movement responses "rises in proportion to the productivity of the intelligence". Klopfer pointed out that "subjects of barely average intelligence rarely give M responses except to Card III (a popular response)".[4] 1 M on III(P) or popular was therefore given a score of 1, 1 to 2M, 1 M without III(P) or 2 M with or without III(P) was given a score of 2, 3 M with or without III(P) a score of 3 and so on. A deduction of .5 was made for every M in (H), that is human figures potrayed as drawings, sculptures, caricature or mythological human figures or (Hd) parts of human figures.

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[1] Ibid., Chapters 10 and 12.

[2] Ibid., p. 355.

[3] Ibid., p. 356.

[4] Ibid., p. 358.

(iv) **Quantity and Quality of W**

Rorschach workers believe that a fair number of W responses of good quality indicates a high level of intellectual function. According to Klopfer and his associates "W% over 30% with high form level rating is a sign of organizational interest and ability which is not found except with persons of superior intellectual ability, W% over 30% with mediocre form level rating shows an effort at organization at mediocre level, W% over 30% with vague or indefinite form perception indicates little effort to organize experience and W% less than 20% indicates a low degree of interest in organization"[1]. In the preparation of rating scale for W these criteria were taken into consideration and scores were allotted on the basis of W% as well as form level rating.

(v) **Quantity and Quality of O**

Rorschach investigators claim that high level of intellectual efficiency is also shown by a fairly large number of original responses with good form level rating. 4 O's or more with form level rating 1.5 and above was given a score of 5, the same number of originals with form level rating 1.0 to 1.4 was given a score of 4 and so on.

(vi) **Variety of Content**

Variety of content categories indicates a flexibility of approach and a range of interpretative background that contributes to the efficiency of intellectual function. 3 to 4 contents have been assigned a score of 1, 5 to 6 a score of 2, 7 to 8 a score of 3, and above 8 contents a score of 4.

(vii) **Succession**

Klopfer and his collaborators suggest that "an orderly succession (7to 9 systematic successions) is considered a contribution to the efficiency of intellectual function, a loose succession (3 to 6 systematic succession) indicates some weakening of intellectual control and confused succession (fewer than 3 systematic succession) is a sign of confusion. A rigid succession is also considered a limitation of efficiency."[2] Orderly succession has, therefore, been given a score of 3, loose a score of 2 and confused and rigid a score of 1.

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[1] Ibid., p. 299–300.

[2] Ibid., p. 314.

Total Score

The total of all these ratings gives an estimate of Intellectual Level of an individual.

II. Control

For the evaluation of Control, all the three modes of Control were taken into consideration namely (i) Outer Control: (a) Socialised Control (FC : CF + C) (b) Control through withdrawal (Achromatic : Chromatic); (ii) Inner Control (M : FM + m) and (iii) Repressive Control (F%). The rating scales for these controls were prepared as follows:

(1) Outer Control

(a) Socialised Control

The relationship of FC to CF + C is an important indicator of Control. FC greater than CF + C is a sign of control over impulsive expression of emotionality, and was given a score of 5. The presence of FC responses of good form level indicates a ready control over emotional impact without loss of responsiveness, this was given a score of 4. Where the number of FC is equalled by the number of CF + C the person is making a valiant attempt at adaptation, but is liable to be thrown out of balance or diverted from the aim set by events which arouse emotional reactions. This ratio CF + C = FC was given a score of 3. CF + C greater than FC was given a score of 2 because this indicates weak control over emotionality. Absence of FC and CF + C was given a score of 1.

(b) Control through Withdrawal

According to Klopfer and his associates, where the achromatic responses outnumber the chromatic responses by two to one, the person's responsiveness to outside stimulation has been interfered with by some kind of traumatic experience and withdrawal has resulted, and where the chromatic responses exceed the achromatic responses by two to one or more, the individual tends to act out his emotions. Both these are not happy states, and have been given the rating of 1. Where the achromatic responses outnumber the chromatic responses by less than two to one, it indicates that the individual is maintaining control of outer expression of emotion by virtue of detaching himself from emotional impact by withdrawal from genuine emotional involvement. Similarly when chromatic responses outnumber the achromatic responses by less than two to one, the individual expresses greater responsiveness to emotional situations, but shows lesser need for approval and affection. Both these states were given a score of 3. Chromatic responses equalling the achromatic responses indicates a favourable balance and, therefore, given a score of 5.

(ii) Inner Control

Ratio of M: FM + m gives an indication of balance between ego values and impulsive life. Where M exceeds FM + m, provided that this tendency is not exaggerated, a healthy state is indicated. This ratio was given a score of 5. M responses of good form level is considered an indication of inner resources sufficient to give a controlled function. This state was given a score of 4. Where M is approximately equal to FM, the impulse life is not in conflict with value system, but according to Klopfer[1] such an adult could lapse into childish pranks without damage to his dignity. This state was given a score of 3. FM + m greater than M was given a score of 2 because it shows that the individual is ruled by immediate needs for gratification rather than by long range goals.

(iii) Repressive Control

Repressive or Constrictive control in Rorschach analysis is judged by F%. F% between 20% to 50% is considered optimum and was given a score of 3, F% 51% to 70% shows that the repressive control is playing a greater role than is required, a score of 2 was given for this. A score of 1 was given to F% 71% to 80%. Overemphasis on form responses (F% over 80%) is pathological and was therefore given a score of 0.

III. Creative Potential

Creative potential as understood in Rorschach literature, has two chief aspects, those referring to the realization of inner creative resources and those referring to object relations. In estimating Creative potential both these aspects were taken into account. Creative potential in imaginal resources was evaluated through (i) M : FM ratio (ii) Quantity of FM and (iii) Quantity of m. Creative potential in object relations was evaluated through (iv) Quantity of M (v) Quantity and quality of FC and (vi) Quantity and quality of Fc. In preparing these scales principles observed in the previous categories as well as criteria laid down by Klopfer and others[2] were followed.

IV. Introversive-Extratensive Balance

Rorschach held that the relationship M : Sum C is an index of Introversiveness or extratensiveness because "M's indicate introversiveness", while colour responses represent the ability to get into rapport, the capacity for emotional adaptation, both personal and situational and these are the "extratensive" features of personality. Klopfer and his associates[3] claim that these characteristics cannot be fully established through M : Sum C relationship alone and therefore the ratio $FM + m : Fc + c + C^1$ should also be considered in any introversive-extratensive personality evaluation. In addition to these ratios Klopfer includes the percentage of responses to the last three inkblots VIII, IX and X as further evidence of introversiveness and extratensiveness. For the evaluation of introversive-extratensive balance in this rating scale, all these three factors have been taken into consideration. For M : Sum C and $FM + m : Fc + c + C^1$ a raito of 1:1 was assigned a rating of 0 and the introversive balance ratings of -1, -2 and -3 while extratensive balance ratings of + 1, + 2 and +3. Underproduction of responses to the last three blots that is to say fewer than 30% of the total number of responses, according to Klopfer, establishes a tendency of introversiveness and therefore given a rating of -1, whereas overproduction (above 40)%) substantiates an extratensive tendency, this was given a rating of + 1. 30% to 40% of the responses to the last three inkblots can be regarded as average responsiveness and therefore, given a rating of 0. The total of all these three ratings gives an estimate of the Introversive-Extratensive Balance of an individual.

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[1] Ibid., p. 289.

[2] Ibid., p. 366-370.

[3] Ibid., p. 373.

V. Level of Aspiration

Rorschach investigators use the W : M ratio to furnish an index of the level of aspiration of an individual. Klopfer[1] is of opinion that an optimum balance is reached whenever there are at least 3 M responses and approximately twice as many W responses. This optimum balance 2 : 1 was given a rating of 5. The ratio W = M shows that the individual has both organisational interest and creative potential and he tends to use his creative potential productively. This ratio was given a rating of 4. When W is greater than twice M the level of aspiration is too high, with ambition outstripping the creative resources. Similarly when W is less than twice M the individual is inclined to lose himself in his own imagination and is unable to utilise his imagination for creative purposes. Both these situations do not help the individual to use his potentialities fully. These ratios were given a rating of 3. M present but W not present was given a rating of 2 and W present but M not present was given a rating of 1.

Scoring of the Rating Scale

Each protocol was taken up separately and rated on the various categories of the Rating Scale described above. This gave total scores for Intellectual level, Control, Creative Potential, Introversive-Extratensive Balance and Level of Aspiration for each subject. These scores were further analysed and treated statistically for group comparisons.

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[1] Ibid., p. 302,

Statistical Procedure

While the Rorschach test grew out of clinical investigations, and is still primarily a method of individual diagnosis, there is increasing emphasis on statistical studies of groups of cases. Prominent methods encountered in Rorschach literature for the statistical treatment of the various scoring categories and quantitative proportions are mean, median, percentage, significance of difference between means ('t' test), significance of difference between medians, significance of difference in proportions exceeding a particular score, chi-square, bi-serial r and analysis of variance. Most investigators have, however, used conventional mental test statistics for the analysis of data.

According to Cronbach "The Rorschach test is unlike conventional instruments and introduces problems not ordinarily encountered. Moreover statistical methods for such tests have not been fully developed."[1] Regarding the choice of techniques Cronbach suggests that "counting procedures such as median be given preference over additive procedures such as mean in dealing with skew Rorschach distributions. To test the significance of difference between two groups the best procedure is to make a cut at some suitable score and compare the number of cases in each group falling beyond the cut using the chi-square."[2]

In the present study median has been used to indicate central tendency. Means and Standard Deviations were also calculated for important Rorschach components. Modal values were calculated only for the engineering students. Modal values could not be used in this study because distributions of many significant Rorschach components were sharply skewed (many subjects earned only 0, 1 and 2 points). This pulled down the modal values considerably, resulting in a distorted picture of the group in many instances. For example in case of engineering students the modal scores for FC, CF and C were found to be .65, .51 and .50 respectively which made CF + C greater than FC.

The main purpose of this chapter is to test the hypotheses that there is no true difference between the four groups under consideration on five important Rorschach components namely Intellectual level, control, Creative potential, Introversive-Extratensive balance and Level of aspiration. As normality of distribution on these variables could not be assumed, Median Test was used to compare the performance of different groups under consideration. This involved finding a common median for the two samples being compared, counting the number of cases above and below the common median in each sample, preparation of a fourfold contingency table and calculating chi-square. Since none of the frequencies were very small, the need for applying Yate's correction did not arise. The significance levels established for this test are the same as those adopted for the Study of Values and Adjustment Inventory.

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[1] L. J. Cronbach, Statistical Methods for Multi-Score Tests, Paper presented before the Biometrics Section, American Statistical Association, December 1948, *Journal of Clinical Psychology*, 1950, 6, 21-25.

[2] Lee J. Cronbach, Statistical Methods Applied to Rorschach Scores, In *Rorschach Science*, Edited by Michael Hirt, op. cit., p. 361.

For finding out intra group relationships between these five Rorschach variables, coefficient of correlation was calculated by the Thompson's Diagonal Method as described in Chapter III. The four Matrices, one for each group, that is, engineering, law, medical and teacher training students were factorised by the Centroid Method. The whole procedure is based upon Fruchter's book.[1] The signs in the fourth column of all the matrices were changed before factorising. In the Rorschach Rating Scale Introversive-Extratensive dimension was taken with positive scores for Extratension and negative for Introversion (hence the negative correlation in the matrices). By reversing the direction of the Introversive-Extratensive scale the correlations were made positive and hence their signs were changed. As the number of variables in the present investigation is only five, only two factors were extracted and the process stopped. The rotation was not done as it was not aimed to study the theory of the variables or to find out their factorial validity. The main aim of the study was to understand the structure of Rorschach traits in the various groups.

Analysis of Data[2]

The Mean, the Median, the Range and the Standard Deviation of all the important Rorschach components occurring among 50 engineering students (ES), 50 Law Students (LS), 50 medical students (MS), 50 student-teachers (ST) and Mean for 200 normal adult students (NAS) (four groups taken as a whole) were calculated. The Modal values for the same components for the engineering students were also found out. The different groups were then compared in respect of these components with the help of the 't' test. The results of these statistical calculations are given in the Appendix D.

Thereafter the groups were compared on the five important Rorschach variables namely Intellectual level, Control, Creative Potential, Introversive-Extratensive balance and Level of aspiration, which were evaluated with the help of the Rorschach Rating Scale described earlier.

Intellectual Level

Table VI. I shows the results of the application of the Median Test to test the significance of divergence between different groups under consideration on Intellectual Level, and Table VI. 2 shows the distribution of cases in categories above and below the common Median for those groups in which the Chi-square values have been found to be significant on Intellecual Level.

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[1] Benjamin Fruchter, *Introduction to Factor Analysis*, New York: D. Van Nostrand Company, Inc., 1954.

[2] See Appendix A for the Data.

Table VI. 1

Differentials in Intellectual Level

S.No.	Groups Compared	Common Mdn	X^2	df	P
1.	Eng. Stu. & Law Stu.	19.40	4.84	1	0.05
2.	Eng. Stu. & Med. Stu.	19.14	9.09	1	0.01
3.	Eng. Stu. & Stu. Tea.	19.10	9.09	1	0.01
4.	Law Stu. & Med. Stu.	17.85	0.65	1	NS
5.	Law Stu. & Stu. Tea.	17.89	0.37	1	NS
6.	Med. Stu. & Stu. Tea.	17.74	0.04	1	NS

Table VI.2

(A)

	BM	AM
Eng.	20	30
Law	31	19

$X^2 = 4.84$
df = 1
P — 0.05

(B)

	BM	AM
Eng.	20	30
Med.	35	15

$X^2 = 9.09$
df = 1
P — 0.01

(C)

	BM	AM
Eng.	20	30
Tea.	35	15

$X^2 = 9.09$
df = 1
P — 0.01

Table VI.1 reveals that the engineering students have been differentiated significantly from law students, medical students and student teachers on Intellectual Level while these three groups differed very little from one another. Table VI. 2 shows that the engineering students cluster more in the category of Above Median while the other three groups more in Below Median. This indicates the superiority of engineering students over all other groups on Intellectual Level.

Control

Table VI.3 shows the results of the comparison of Control between different groups.

Table VI. 3

Differentials in Control

S. No.	Groups Compared	Common Mdn	X^2	df	P
1.	Eng. Stu. & Law Stu.	10.86	0.00	1	NS
2.	Eng. Stu. & Med. Stu.	10.50	0.64	1	NS
3.	Eng. Stu. & Stu. Tea.	10.31	0.37	1	NS
4.	Law Stu. & Med. Stu.	10.50	0.64	1	NS
5.	Law Stu. & Stu. Tea.	10.97	0.37	1	NS
6.	Med. Stu. & Stu. Tea.	10.70	1.97	1	NS

It is evident from the above table that there is no significant difference between engineering, law, medical students and student teachers on Control, as the Chi-square value in each case is less than the probable value at 5% level. The results therefore indicate that these groups are almost similar in respect of Control.

Creative Potential

The following table presents differentials in Creative Potential:

Table VI. 4

Differentials in Creative Potential

S. No.	Groups Compared	Common Mdn	X^2	df	P
1.	Eng. Stu. & Law Stu.	11.43	1.44	1	NS
2.	Eng. Stu. & Med. Stu.	10.56	11.60	1	0.01
3.	Eng. Stu. & Stu. Tea.	12.44	1.98	1	NS
4.	Law Stu. & Med. Stu.	10.00	5.91	1	0.05
5.	Law Stu. & Stu. Tea.	11.77	2.56	1	NS
6.	Med. Stu. & Stu. Tea.	10.81	14.44	1	0.01

The above table reveals that medical students have been differentiated from engineering, law and teacher's training students on Creative potential while the last three groups have not shown any significant difference between themselves.

The distribution of cases in categories below and above the common Median for groups with serial numbers 2, 4 and 6 is given in the following table:

Table VI. 5

	(A)			(B)			(C)	
	BM	AM		BM	AM		BM	AM
Eng.	18	32	Law	23	27	Med.	35	15
Med.	35	15	Med.	35	15	Tea.	16	34

The table clearly shows that engineering, law and teacher training students have much larger frequency on above Median than the medical students, which indicates that the medical students do not have as much creative potential as the other three groups have.

Introversive-Extratensive Balance

The results of the comparison of different groups under consideration on Introversive-Extratensive Balance are found in the following table:

Table VI. 6

Differentials in Introversive-Extratensive Balance

S. No.	Groups Compared	Common Mdn	X^2	df	P
1.	Eng. Stu. & Law Stu.	-1.24	2.06	1	NS
2.	Eng. Stu. & Med. Stu.	-0.58	1.00	1	NS
3.	Eng. Stu. & Stu. Tea.	-0.90	0.66	1	NS
4.	Law Stu. & Med. Stu.	-1.40	5.84	1	0.05
5.	Law Stu. & Stu. Tea.	-1.74	0.39	1	NS
6.	Med. Stu. & Stu. Tea.	-1.08	3.25	1	NS

The above table shows that only law students and medical students have been differentiated on this scale at 5% level while other groups do not differ significantly. The distribution of law students and medical students is given below:

Table VI. 7

	Below Mdn.	Above Mdn.
Law	34	16
Med.	22	28

$$X^2 = 5.84$$
$$df = 1$$
$$P — 0.05$$

The distribution shows that in case of law students the frequency is much more in the category of Below Mdn., while in case of medical students the frequency is more on Above Mdn. This indicates that law students are more introversive than medical students. Table VI. 6 shows that all the common Medians are in the negative which indicates that all the four groups have a tendency toward introversiveness.

Level of Aspiration

Table VI. 8 shows the differentials in Level of Aspiration.

Table VI. 8

Differentials in Level of Aspiration

S. No.	Groups Compared	Common Mdn	X^2	df	P
1.	Eng. Stu. & Law Stu.	3.31	0.70	1	NS
2.	Eng. Stu. & Med. Stu.	3.16	1.33	1	NS
3.	Eng. Stu. & Stu. Tea.	3.30	1.33	1	NS
4.	Law Stu. & Med Stu.	3.09	0.10	1	NS
5.	Law Stu. & Stu. Tea.	3.25	0.10	1	NS
6.	Med. Stu. & Stu. Tea.	3.10	0.00	1	NS

The inspection of the above table indicates that the groups under consideration do not differ significantly on the Level of Aspiration. Hence the conclusion is that these groups are similar in respect of this variable.

Testing of Hypotheses

Hypotheses numbers (1), (10), (2), (11) and (7) set in Chapter I stated that there is no difference between the groups under study on Intellectual Level, Control, Creative Potential, Introversive-Extratensive Balance and Level of Aspiration. Analysis of data reveals the respective positions as follows:

Intellectual Level

In case of Eng. Stu. & Law Stu., Eng. Stu. & Med. Stu. and Eng. Stu. & Stu. Tea. the hypothesis was rejected while in case of other three groups it has been retained.

Control

The hypothesis has been retained in case of all the groups under study.

Creative Potential

The hypothesis has been retained in case of Eng. Stu. & Law Stu., Eng. Stu. & Stu. Tea. and Law Stu. & Stu. Tea., and rejected in case of other three groups under consideration.

Introversive-Extratensive Balance

The hypothesis has been retained in case of all the groups except Law Stu. & Med. Stu.

Level of Aspiration

The hypothesis has been retained in case of all the groups under study.

The Relationships between Rorschach Components

To have an estimate of the relationships between the five Rorschach components namely, intellectual level, Control, Creative potential, Introversive-Extratensive balance and Level of aspiration within each group coefficients of correlation were computed. Four correlation matrices, one for each group emerged in this way. These matsices wese then factorised by the Centroid method. A general factorial interpretation of the matrices is given in the following pages.

Table VI. 9

Inter-Correlation of Rorschach Variables in the Group of Engineering Students

	Int. Lev.	Control	Cre. Pot.	Int-Ext Bal.	Lev. of Asp.
Int. Lev.	-	.53**	.68**	-.20	.40**
Control	.53**	-	.47**	.11	.30**
Cre. Pot.	.68**	.47**	-	-.18	.36**
Int. - Ext. Bal.	-.20	.11	-.18	-	-.52**
Lev. of Asp.	.40**	.30*	.36**	-.52**	-

Inspection of the above matrix shows that Intellectual level, Control, and Creative potential form one cluster. Creative potential and Intellectual level seem to be more compact than the other one (r=.68, significant at 0.01 level). Introversive-Extratensive dimension of Rorschach stands out a distinctly different variable in the matrix. Its negative correlation with level of aspiration only suggests that Introversion (negative end of the Introversive-Extratensive dimension), is associated with Level of aspiration, or in other words an introversive person is likely to have a higher level of aspiration than an extratensive one. The following table shows the Centroid factor loadings of Rorschach variables in the group of engineering students.

Table VI. 10

Centroid Factor Loadings of Rorschach Variables in the Group of Engineering Students

Variable No.	Factor Loadings I	Factor Loadings II	Squares of Loadings I	Squares of Loadings II	Communality
1. Int. Lev.	.788	.282	.621	.080	.701
2. Control	.544	.447	.296	.200	.496
3. Cre. Pot.	.750	.278	.562	.077	.639
4. Int. Ext.Bal.	.414	-.585	.171	.342	.513
5. Lev. of Asp.	.664	-.406	.441	.165	.606

The above table points out that the first Centroid factor is a general factor which essentially represents the Intellectual level, Creative potential, Level of aspiration and Control in the group of engineering students. It is obvious because out of .701 communality of the variable Intellectual level, as much as .621 is due to this factor. As regards Creative potential, communality is explained by this general factor to the extent of .562 out of .639. The second factor differentiates between the Intellectual level and Creative potential on the one hand, and between Introversive-Extratensive balance and Level of Aspiration on the other.

Table VI. 11

Inter-Correlation of Rorschach Variables in the Group of Law Students

	Int. Lev.	Control	Cre. Pot.	Int.-Ext. Bal.	Lev. of Asp.
Int. Lev.	-	.47**	.70**	-.17	.56**
Control	.47**	-	.61**	.20	.42**
Cre. Pot.	.70**	.61**	-	-.21	.59**
Int. Ext. Bal.	-.17	.20	-.21	-	-.43**
Lev. of Asp.	.56**	.42**	.59**	-.43**	-

The above matrix shows that Intellectual level, Control, Creative potential and Level of aspiration form one cluster. Creative potential and Intellectual level seem to be more compact than the other two. Introversive-Extratensive dimension of Rorschach stands out a distinctly different variable. It has negative correlation with Level of aspiration, Creative potential and Intellectual level.

Table VI. 12

Centroid Factor Loadings of Rorschach Variables in the Group of Law Students

Variable No.	Factor Loadings I	Factor Loadings II	Squares of Loadings I	Squares of Loadings II	Communality
1.	.785	.144	.616	.021	.637
2.	.577	.520	.333	.270	.603
3.	.849	.226	.719	.051	.770
4.	.314	-.603	.099	.364	.463
5.	.782	-.295	.612	.087	.699

Inspection of table VI. 12 reveals that the first Centroid factor is a general factor which essentially represents the Creative and Intellectual potential of the persons in the sample. Out of .770 communality of the variable Creative potential, as much as .719 is due to this factor. Again out of .637 as the communality for Intellectual level, .616 is explained by this factor. The second factor differentiates Control from Introversive-Extratensive balance. The other loadings are quite small.

Table VI. 13

Inter-Correlation of Rorschach Variables in the Group of Medical Students

	Int. Lev.	Control	Cr. Pot.	Int. Ext. Bal.	Lev. of Asp.
Int. Lev.	-	.60**	.80**	-.35*	.59**
Control	.60**	-	.67**	-.25	.42**
Cr. Pot.	.80**	.67**	-	-.29*	.58**
Int. Ext. Bal.	-.35*	-.25	-.29*	-	-.51**
Lev. of Asp.	.59**	.42**	.58**	-.51**	-

Inspection of the above correlation matrix shows that Intellectual level, Control, Creative potential and Level of aspiration form one cluster. In this group, Intellectual level and Creative potential form a highly compact trait (r = .80, significant at 0.01 level). Control and creative potential are also sufficiently compact. Here again Introversive-Extratensive balance stands out a distinctly different variable in the matrix.

Table VI. 14

Centroid Factor Loadings of Rorschach Variables in the Group of Medical Students

Variable No	Factor Loadings I	Factor Loadings II	Squares of Loadings I	Squares of Loadings II	Communality
1	.872	.194	.760	.038	.798
2.	.709	.254	.503	.065	.568
3.	.853	.314	.728	.099	.827
4.	.519	-.438	.269	.192	.461
5.	.731	-.300	.534	.090	.624

Among medical students the first factor comes out to be a highly general factor which represents the Intellectual level, Creative potential, Control and Level of aspiration. Here also the communality .827 of the variable Creative potential and .798 of Intellectual level, the general factor explains them to the extent of .728 and .760 respectively. Even in case of Level of aspiration .624 communality is explained by this general factor to the extent of .534. In this group also the second factor differentiates between two trait groups namely, Control and Creative potential and Introversive-Extratensive balance and Level of aspiration.

Table VI. 15

Inter-Correlation of Rorschach Variables in the Group of Student-Teachers.

	Int. Lev.	Control	Cr. Pot.	Int.-Ext. Bal.	Lev. of Asp.
Int. Lev.	-	.39**	.66**	-.14	.53**
Control	.39**	-	.70**	.10	.34**
Cr. Pot.	.66*	.70**	-	.01	.39**
Int-Ext. Bal.	-.14	.10	.01	-	-.45**
Lev. of Asp.	.53**	.34**	.39**	-.45**	-

In this group Intellectual level, Creative potential and Level of aspiration form one cluster, in which Intellectual level and Creative potential seem to be compact, but Creative potential and Control are more compact than Creative potential and Intellectual level. Here also Introversive-Extratensive dimension stands out distinctly a different variable as in other groups.

Table VI. 16

Centroid Factor Loadings of Rorschach Variables in the Group of Student-Teachers

Variable No.	Factor I	Loadings II	Squares of Loadings I	II	Communality
1.	.752	.084	.565	.007	.572
2.	.641	.414	.411	.171	.582
3.	.771	.471	.594	.222	.816
4.	.294	-.585	.086	.342	.428
5.	.708	-.389	.501	.151	.652

In this group also the first factor seems to be a general factor which has equally high loadings on Intellectual level, Control, Creative potential and Level of aspiration. The variance contributed by this factor in case of the variables Intellectual level, Creative potential and Level of aspiration is of the order of .565 out of .572, .594 out of .816 and .501 out of .652 respectively. As in other groups the second factor differentiates between the two groups of traits namely Control and Creative potential and Introversive-Extratensive balance and Level of aspiration. The factor clearly represents introversive-Extratensive dimension more than others as the variance contributed by this factor is .342 out of .428 in respect of this variable.

Factor analysis of these four matrices revealed that Intellectual level, Creative potential and Control can be contrasted with the Introversive-Extratensive dimension and Level of aspiration according to the Rorschach test. The five Rorschach traits have also been found to be very much overlapping as the communalities are quite large and the correlation pretty high. The Introversive-Extratensive variable stands separately from the rest and (negative end of the Int.-Ext. dimension) is associated to some extent with the level of aspiration.

To have an idea of the general trend of the relationships between Rorschach components in the four groups taken together (200 students in higher professions) the r's obtained in the four matrices were averaged. The averaging of r's was done by transforming the r's into Fisher's z function and then taking the arithmetic means of the z's. This mean z was again converted back into an equivalent r. The correlation matrix of these average r's is given in table VI. 17.

Table VI. 17

Inter-Correlation of Rorschach Variables in the whole Group of Students of the Four Professions

	Int. Lev.	Control	Cr. Pot.	Int. Ext. Bal.	Lev. of Asp.
Int. Lev.	-	.50**	.71**	-.22	.52**
Control	.50**	-	.62**	.04	.37**
Cr. Pot.	.71**	.62**	-	-.15	.48**
Int-Ext. Bal.	-.22	.04	-.15	-	-.48**
Lev. of Asp.	.52**	.37**	.48**	-.48**	-

The above table shows that Intellectual level, Control, Creative Potential and Level of aspiration form one cluster. Creative potential and Intellectual level seem to be more compact than the other two, while Creative potential and Control are also very compact. As in the separate groups Introversive-Extratensive dimension here also stands out a distinctly different variable in the matrix. Its negative correlation with Level of aspiration suggests that an introversive person in these higher professions is likely to have higher level of aspiration than an extratensive person.

Discussion of Results

Comparison of engineering, law, medical and teacher training students with each other on the five Rorschach components, namely, Intellectual Level, Control, Creative Potential, Introversive-Extratensive Balance and Level of Aspiration indicated that the most discriminating indices are Intellectual Level and Creative Potential in which the largest differences were found. This finding is in agreement with those of Harrower and Cox (1942), Kaback (1946) and Rieger (1949) who compared different occupational groups with the help of the Rorschach test and found largest differences on the components indicative of intelligence.

Intellectual Level

The Rorschach test gives a reasonably accurate assessment of the intellectual level of the subject. This does not mean that this test can serve as a substitute for a test of general intelligence. According to Klopter and his associates "the intellectual estimate derived from the Rorschach performance is primarily based upon the intellectual level of the perceptual process as it may be deduced from the concepts given."[1] Another striking feature of the Rorschach test is that it tries to assess intelligence in conjugation with the emotional aspects of personality which is generally not done by other traditional tests of intelligence. Further, this test not only gives an indication of the actual limits of intellectual capacity of the subject but also indicates the general level of efficiency of intellectual function, that is, the extent to which the potentiality is realised.

In this study engineering students have been differentiated from the other three groups on Intellectual level, while law, medical and teacher training students have been found to be alike in respect of this variable as they do not differ significantly. This indicates the superiority of engineering students over all other groups in Intellectual level. The finding of this study is in keeping with that of Steiner (1953), who administered Rorschach test to 30 engineers and reported that they were characterised by superior intelligence. Begalman's[2] study of Freshman engineering students revealed that they were near the top in intelligence.

The findings on the Intellectual level also corroborate with the findings on the Educational data (Tables III. 6 and III. 8) where engineering students were found to be definitely superior than the other three groups on the High School and Intermediate Results.

Control

The concept of Control is an important one in Rorschach interpretation. According to Klopfer[3] "It is a criterian of the effectiveness of general adjustment to life situation". A well adjusted person must have all the three modes of control that is, outer, inner and constrictive at the optimum level, so that he can effectively keep his grip on reality and maintain steady output without emotional tension.

Analysis of data on Control in the present study shows that there are no significant differences between engineering, law, medical and teacher training students on this variable, indicating that these groups are alike in respect of Control. This corroborates the findings on Emotional adjustment (Table V. 12) where these groups were not differentiated on Emotional Adjustment.

Creative Potential

Creative potential has been used in Rorschach literature in a slightly different context than is ordinarily understood. According to Klopfer and his associates[4] Creative potential "implies a capacity to integrate impulses or drives within the organization of self and conscious values, and to integrate inner experience with external reality and its demands". When this integration is optimally achieved, the energies stemming from primitive impulses are available to the individual to enrich his imaginal process and is reflected in creative output.

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[1] Klopfer and others, op. cit., p. 353.

[2] J. Begalman, *Relation of Body built, Physical performance, Intelligence and Recreational interests to Occupational choice,* Unpublished Doctoral Thesis, Ann Arbor, Michi., University of Michigan, 1951.

[3] Klopfer and others, op. cit., p. 360.

[4] Ibid., p. 360.

The results of the comparison of Creative potential between the different groups under study reveals that medical students have been differentiated from engineering, law and teacher training students on this variable while the last three groups have not shown any significant difference between each other. This indicates that engineering, law and teacher training students have similar amount of Creative potential, while the medical students do not have as much creative potential as the other three groups have.

Introversive-Extratensive Balance

The concepts of Introversion and Extratension are widely current in Rorschach literature. But they are used in a slightly different context. An introversive person is one who possesses rich phantasy and imagination and whose involvement with and responsiveness to the outer world is reduced, while, on the other hand, and extratensive person is one who is highly responsive to outer environment in terms of overt emotional expression or affectional warmth of feeling. It may be pointed out that these concepts do not imply that an introversive person is less well adjusted than extratensive or vice versa. However, imaginal function is considered to be a very important aspect of creativity and inner resources a helpful basis of control.

Analysis of data in the present study revealed that except the group of law and medical students the other groups under study do not differ markedly from each other on the Introversive-Extratensive balance. A comparison of law and medical students showed that the law students are more introversive than the medical students. In general the data given in Table VI. 6 revealed that all the four groups of professional students have a tendency toward introversiveness. This observation is in keeping with the popular idea that people engaged in the higher professions besides being socially inclined have to play a greater role as thinkers and contributors in the advancement of learning, which requires introversive orientation.

Level of Aspiration

Level of Aspiration is another important concept in Rorschach analysis. It gives an indication of the extent to which the individual is able to mobilise his creative energies to back up his intellectual interests and abilities. The level of aspiration is estimated from the W : M ratio. Rorschach investigators are agreed that individuals with at least three or four times as many W as M responses do not seem to make the best use of their creative or productive abilities, if M predominates in the W : M ratio the subject is inclined to lose himself in in his own imagination and is unable to utilise his imagination for creative purposes. According to Klopfer and his associates the optimum balance is reached whenever 3 M and approximately twice as many W responses appear in a Rorschach record.

The analysis of data in the present study revealed that there is no significant difference between the groups under study on Level of Aspiration. This tends to suggest that the level of aspiration of one group is as high as those of the other Groups.

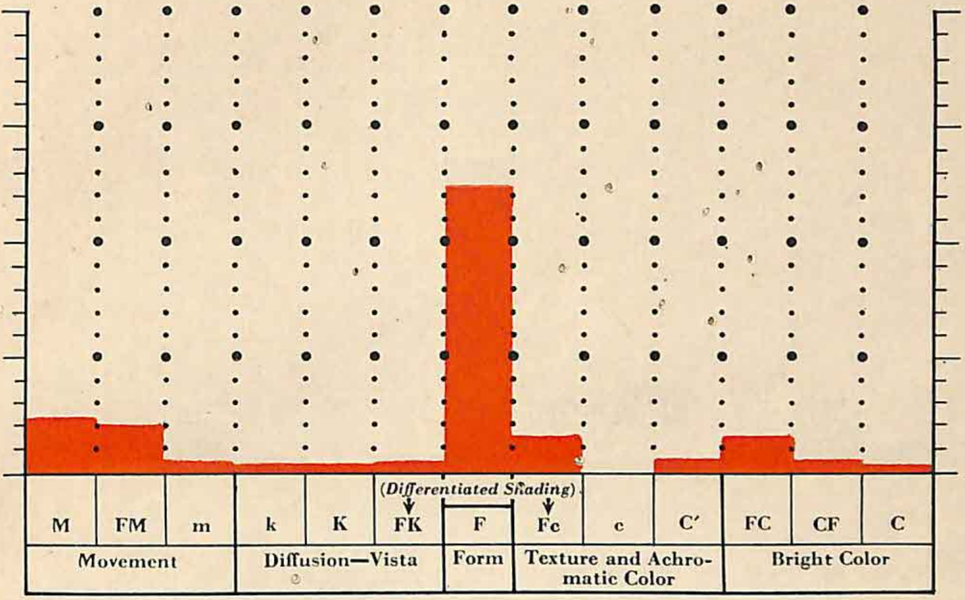
Basic Structure of Personality

Rorschach responses obtained from groups of subjects may be described in both quantitative and qualitative forms. Many Rorschach technicians declare that the qualitative interpretation of Rorschach responses reveals the basic structure of personality. Qualitative analyses are based on the relationships that exist among different Rorschach components. These relationships taken together give an integrated picture or total configuration of the personality. The following pages will throw light on the personality structures of engineering, law, medical and teacher training students. Psychogram, Relationships among factors based on average (Median) Rorschach components and personality vignette of each group have been given separately.

Engineering Students

They are young adults of superior intelligence, and have adequate capacity for imagination and for creative and original thinking $(M = 2.45, O = 3.68)$. They have a well balanced impulse control and inner stability which functions smoothly in emotional situations $(FC : CF + C = 1.58 : 1.06)$. Their constrictive control is somewhat greater than required for a still better spontaneous functioning$(F\% = 54.62)$. Their impulse life is subordinate to and fairly well integrated with their value system $(M : FM = 2.45 : 2.28)$. They seem to make the best use of their creative and productive abilities. Their level of aspiration is high but not reaching beyond their productive resources $(W : M = 6.85 : 2.45)$. They are sensitive and responsive to condition outside $(Fc + c + C' : FC + CF + C = 2.33 : 2.64)$ and they have good social adjustment. They have a minimum amount of anxiety as expressed by a few K and k responses, have a balanced and very healthy approach to everyday reality $(W\% = 26.64\%, D\% = 52.58\%, d\% = 7.31\%$, and $Dd + S\% = 5.29\%)$. They may be characterised as practical-minded persons (greater emphasis on D). The tendency toward introversiveness is more pronounced $(M : Sum\ C = 2.45 : 1.60, FM + m : Fc + c + C' = 4.73 : 2.33$ and percentage of R to cards VIII, IX, X $= 33.55\%)$. They have a wide range of interests $(H + A : 8$ Other Content Categories). They are slightly more interested in concrete, man-made objects (More Obj. responses). In terms of general adjustment this group is by far the best adjusted.

Fig. VI. 1. Psychogram of Engineering students.



RELATIONSHIPS AMONG FACTORS

M : FM = 2.45 : 2.28
M : FM + m = 2.45 : 2.84

F% = 54. 62%
(FK + F + Fc)% = 66.19%
F : (FK + Fc) = 12.66 : 2.21

Sum C = 1.60
FC : (CF + C) = 1.58 : 1.06
(Fc + c + C') : (FC + CF + C) - 2.33 : 2.64
% of R to Cards VIII, IX, X = 33.55%

M : Sum C = 2.45 : 1.60
(M + FM + m) : (FC + CF + C) = 5.29 : 2.64
(FM + m) : (Fc + c + C') = 4.73 : 2.33

Average No. of R = 22.50
Highest F.L.R. = 2.10
Average F.L.R. = 1.19
W : D : d : Dd : S
6.85 : 12.31 : 1.42 : 0.64 : 0.72

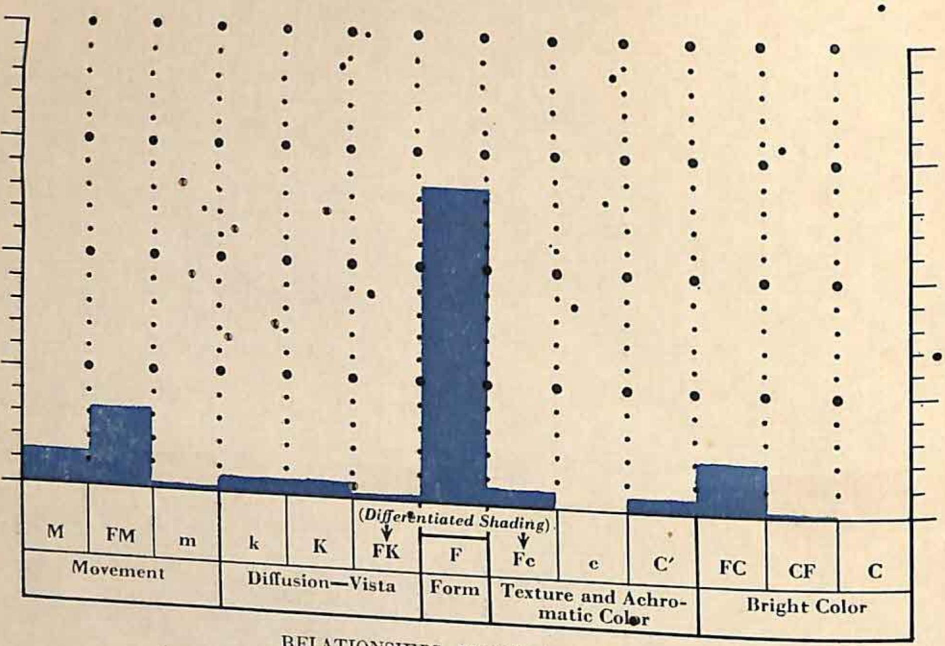
W% : D% : D% : (Dd + S)%
26.64% : 52.58% 7.31% : 5.29%

W : M = 6.85 : 2.45

(H + A) : 8 Other Content Categ.

(H + A) : (Hd + Ad) = 9.88 : 2.07
H% = 17.87
A % = 34.20
P % = 15.87
O% = 14.00
P = 4.00
O = 3.68

Fig. VI. 2. Psychogram of Law students.



RELATIONSHIPS AMONG FACTORS

M : FM = 1.35 : 3.36

M : FM + m = 1.35 : 3.44

F% = 60.09%

(FK + F + Fc)% = 61.17%

F : (FK + Fc) = 13.95 : 0.78

Sum C = 1.42

FC : (CF + C) = 2.10 : 0.11

(Fc + c + C') : (FC + CF + C)
1.36 : 2.21

% of R to Cards
VIII, IX, X = 35.00%

M : Sum C = 1.35 : 1.42
(M + FM + m) : (FC + CF + C) = 4.70 : 2.21
(FM + m) : (Fc + c + C') = 3.44 : 1.36

Average No. of R = 21.39
Highest F.L.R. = 1.85
Average F.L.R. = 1.15

W	: D	: d	: Dd	: S
9.44	: 9.50	: 2.22	: 0.69	: 0.66

W% :	D% :	d% :	Dd + S%
46.64% :	46.50%	: 3.18% :	4.27%

W : M = 9.44 : 1.35

H + A : 8 Other Content Categ.

(H + A) : (Hd + Ad) = 8.81 : 1.44

H% = 14.93%
A% = 34.18%
P% = 14.50%
O% = 9.62%
P = 3.41
O = 2.44

Law Students

They are intelligent adults. Their functioning of impulse control is within the normal range. The dominance of basic drives interferes with a fully mature and creative responsiveness ($M : FM = 1.35 : 3.36$). They are guided more by these drives rather than by long range goals. Conscious repression of impulses ($F\% = 60.09\%$) also deprives them of the opportunity to utilize the inner resources for constructive solution of everyday problems. They are, however, striving to express their emotions in a socially approved manner with inadequate emotional involvement in the situation of outer reality ($FC : CF + C = 2.10 : 0.11$). This group seems to have an ambivalent balance ($M : \text{Sum } C = 1.35 : 1.42$, percentage of R to Cards VIII, IX, $X = 35.00\%$) with a tendency toward introversiveness ($FM + m : Fc + c + C' = 3.44 : 1.36$). They have a good eye for the practical side of life ($D\% = 46.50\%$). An excessive amount of W ($W\% = 46.64\%$) suggests an uncommon preoccupation with abstract concepts. They seem to have too many lofty ideas and an overwhelming ambition to appear big. They are unable to achieve their goals, as they are set at too high a level ($W : M = 9.44 : 1.35$). Anxiety is somewhat above the average as evidenced by high W%, FM greater than M, conflicting balance ratio and also from the repression and denial of affectional need ($F : FK + Fc = 13.95 : 0.78$). They have a fairly wide range of interests ($H + A : 8$ Other Content Categ.). The structure of ego seems to be somewhat weak with tensions and frustrations. However, in terms of general adjustment this group falls within the normal range.

Medical Students

They are intelligent adults. Their impulsive and affective resources are not adequately utilized to give constructive solution to the problems of everyday living. Their conscious repression of impulses plays a relatively greater role ($F\% = 61.04\%$) and inner stability a relatively smaller role. Fantasy life is still immature, and is dominated for the most part by primitive instincts and drives ($M : FM = 0.89 : 2.50$). They are guided more by impluse rather than by long range goals. They have an unusually high level of aspiration ($W : M = 7.50 : 0.89$), but they cannot throw enough of their creative energies behind their efforts to give solid achievement. They give easy vent to their emotions in outer reality ($Fc + c + C' : FC + CF + C = 1.73 : 1.87$) and they feel and act appropriately to the social demands of the situation ($FC : CF + C = 1.35 : 0.52$). Unusually low H% (8.89%) seems to suggest social distanciation and a superficial conformity. They seem to possess an ambiequal balance ($M : \text{Sum } C = 0.89 : 0.94$, % of R to Cards VIII, IX, $X = 36.50\%$) with a tendency toward introversiveness ($FM + m : Fc + c + C' = 3.39 : 1.73$). Regard for the major problems of practical life is normal, but somewhat greater W% (32.84%) suggests either infantilism or an uncommon preoccupation with abstract concepts. Fairly marked amount of anxiety and conflict is evidenced by high W%, low H%, conflicting balance ratio and F : FK+Fc ratio (12.67 : 1.03). Concentration of greater number of responses in H + A and At. Categories indicates a rather limited interest. They show greater interest in Anatomy (At. - 3.81) which is a sign of vocational interest. It also suggests basic personality insecurity to some extent. The ego is somewhat weak and there are tensions, frustrations and inhibitions. However, in terms of general adjustment this group falls within the normal range.

Student-Teachers

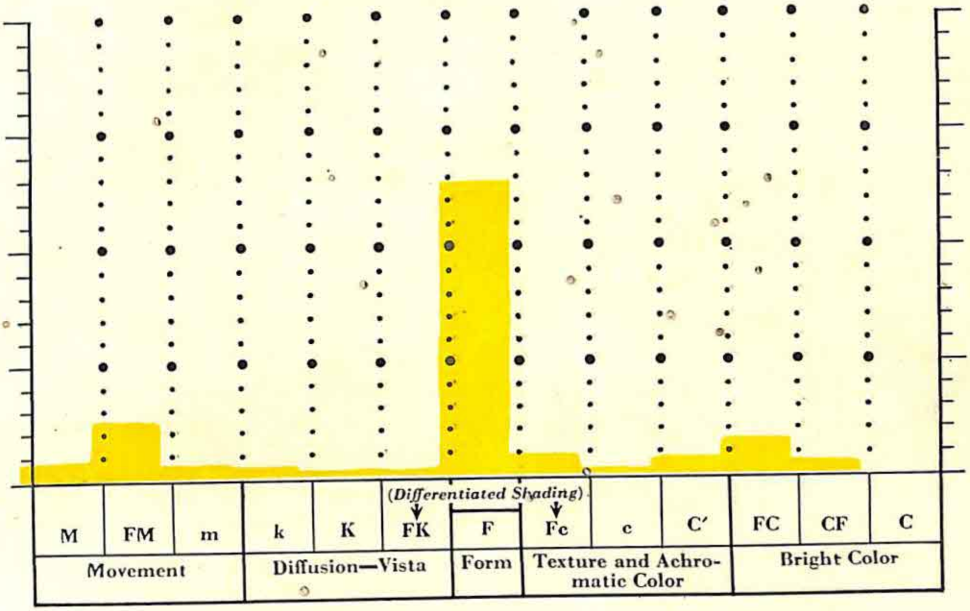
Student-teachers are intelligent adults. Potentially they are comparable with law students and medical students. However, their phantasy life is still immature and is dominated mostly by primitive instincts and drives and as such it is not capable to cope with the tasks set by human existence (M : FM = 1.42 : 3.52). There is marked emphasis on rational control (F% = 54.50%). They are more reactive to the emotional situations of outer reality (Fc + c + C : FC + CF + C = 1.84 : 3.39). Their social adaptation is adequate. Their level of aspiration is not consistent with their abilities and the drive towards achievement does not have requisite energy and potentiality (W : M = 7.15 : 1.42). They seem to possess an ambivalent balance (M : Sum C = 1.42 : 1.96, % of R to Cards VIII, IX, X = 35.12%) with a tendency toward introversiveness (FM + m : Fc + c + C' = 4.06 : 1.84). They are reality oriented and have practical approach to everyday situation (D% = 51.04%). They also show a tendency to be attracted more by the petty side issues of a problem (emphasis on Dd). They have fairly wide range of interest (H + A : 8 Other Content categories). There are tensions and anxieties to some extent. However, in terms of general adjustment, this group falls within the normal range.

Psychograms

A comparative study of the four psychograms reveals that the responses pile up in the centre of all the four psychograms (in the F column). The frequencies in the central column of these figures range from 12.66 to 14.50. The responses on the right hand side are fewer than those on the left hand side in all the four groups. This immediately suggests that phantasy life dominates over emotional life.

The left hand side of the psychogram is believed to give indications of phantasy life and the extent of inner anxiety. On comparing the left hand side of the four psychograms it is found that in case of law, medical and teacher-training students FM responses outnumber the M responses. This suggests that the fantasy life in these three groups is not mature enough to lend stability to their adjustment. The effectiveness of value system is limited in these cases. Among engineering students M responses are slightly more than the FM responses which suggest inner stability and mature phantasy life. The k, K, FK columns

Fig. VI. 3. Psychogram of Medical students.



RELATIONSHIPS AMONG FACTORS

M : FM = 0.89 : 2.50
M : FM + m = 0.89 : 3.04

F% = 61.04%
(FK + F + Fc) = 67.95%
F : (FK + Fc) = 12.67 : 1.03

Sum C = 0.94
FC : (CF + C) = 1.35 : 0.52
(Fc + c + C') :
(FC + CF + C)
1.73 : 1.87
% of R to Cards
VIII, IX, X = 36.50%

M : Sum C = 0.89 : 0.94
(M + FM + m) : (FC + CF + C) = 3.93 : 1.87
(FM + m) : (Fc + c + C') = 3.39 : 1.73

Average No. of F = 20.50
Highest F.L.R. = 1.93
Average F.L.R. = 1.15
W : D : d : Dd : S
7.5 : 9.82 : 1.58 : 1.06 : 0.69

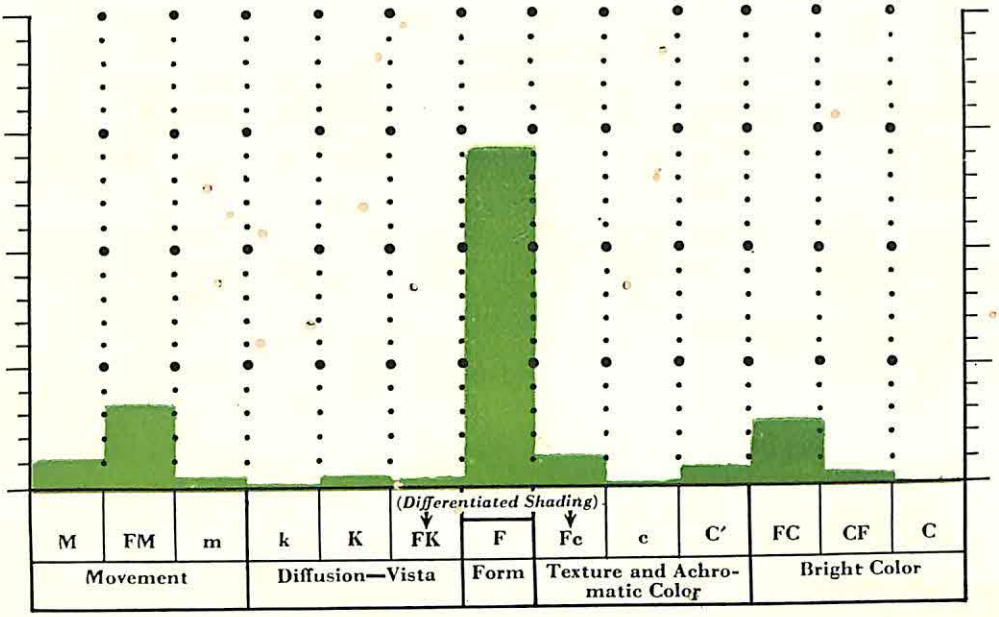
W% : D% : d% : Dd + S%
32.84% : 49.95% : 7.83% : 5.05%

W : M = 7.50 : 0.89

(H + A) : 7 Other Content Categ.

(H + A) : (Hd + Ad) = 8.33 : 1.34
H% = 8.89%
A% = 38.50%
P% = 15.17%
O% = 12.05%
P = 3.47
O = 2.23
At. = 3.81

Fig. VI. 4. Psychogram of Student Teachers



RELATIONSHIPS AMONG FACTORS

M : FM = 1.42 : 3.52
M : FM + m = 1.42 : 4.06

F% = 54.50%
(FK + F + Fc)% = 61.95%
F : (FK + Fc) = 14.50 : 1.67

Sum C = 1.96
FC : (CF + C) = 2.84 : 0.55
(Fc + c + C') :
(FC + CF + C)
1.84 : 3.39
% of R to Cards
VIII, IX, X = 35.12%

M : Sum C = 1.42 : 1.96
(M + FM + m) : (FC + CF + C) = 5.48 : 3.39
(FM + m) : (Fc + c + C') = 4.06 : 1.84

Average No. of R = 26.34
Highest F. L. R. = 1.80
Average F. L. F. = 1.10
W : D : d : Dd : S
7.15 : 13.73 : 2.36 : 1.64 : 1.35

W% : D% : d% : Dd + S%
25.06% : 51.04% : 7.31% : 9.72%

W : M = 7.15 : 1.42

(H + A) : 8 Other Content Categ.

(H + A) : (Hd + Ad) : 11.56 : 2.02
H% = 15.98%
A% = 36.92%
P% = 15.26%
O% = 10.50%
P = 3.74
O = 3.07

of the four groups along with m on the left hand side present the picture of inner anxiety and hostility. The frequency of responses on these columns in the four psychograms do not reveal any significant difference.

The right hand side of the psychogram gives an indication of the nature of subject's relationship with the environment. The frequency of colour and texture responses as a whole are greater in law students and student teachers than the other two groups. This suggests that the law students and student teachers are emotionally more labile and responsive to social environment than the other two groups.

More detailed picture will be revealed by comparing the Rorschach components and relationships among factors in the four groups, as given in Table VI.18.

Table VI. 18

Rorschach Components and Relationship among Factors Occuring among engineering, law, medicine and teacher training students.

Rorschach Comp. & relationship among factors	Eng. Stu.	Law Stu.	Med. Stu.	Stu. Tea.
R	22.50	21.39	20.50	26.34
Highest F.L.R.	2.10	1.85	1.93	1.80
Average F.L.R.	1.19	1.15	1.15	1.10
W%	26.64%	46.64%	32.84%	25.06%
D%	52.58%	46.50%	49.95%	51.04%
d%	7.31%	3.18%	7.83%	7.31%
(Dd+S)%	5.29%	4.27%	5.05%	9.72%
P%	15.87%	14.50%	15.17%	15.26%
O%	14.00%	9.62%	12.05%	10.50%
M	2.45	1.35	0.89	1.42
A%	34.20%	34.18%	38.50%	36.92%
W : M	6.85 : 2.45	9.44 : 1.35	7.50 : 0.89	7.15 : 1.42
M : FM	2.45 : 2.28	1.35 : 3.36	0.89 : 2.50	1.42 : 3.52
M : FM+m	2.45 : 2.84	1.35 : 3.44	0.89 : 3.04	1.42 : 4.06
Sum C	1.60	1.42	0.94	1.96
FC : CF+C	1.58 : 1.06	2.10 : 0.11	1.35 : 0.52	2.84 : 0.55
Fc+c+C':FC+CF+C	2.33 : 2.64	1.36 : 2.21	1.73 : 1.87	1.84 : 3.39
F%	54.62%	60.09%	61.04%	54.50%
FK+F+Fc%	66.19%	61.17%	67.95%	61.95%
F : FK+Fc	12.66 : 2.21	13.95 : 0.78	12.67 : 1.03	14.50 :1.67

(continued)

Rorschach Comp. & relationship among factors	Eng Stu.	Law Stu.	Med. Stu	Stu. Tea.
M : Sum C	2.45 : 1.60	1.35 : 1.42	0.89 : 0.94	1.42 : 1.96
FM+m : Fc+c+C'	4.73 : 2.33	3.44 : 1.36	3.39 : 1.73	4.06 : 1.84
% of R to Cards VIII, IX, X	33.55%	35.00%	36.50%	35.12%
H + A : Other Contents	H + A : 8	H + A : 8	H + A : 7	H + A : 8
H + A : Hd + Ad	9.88 : 2.07	8.81 : 1.44	8.33 : 1.34	11.56 : 2.02
H%	17.87%	14.93%	8.89%	15.98%

An examination of Rorschach components expressive of intellectual level in Table VI. 18 indicates intellectual superiority among the engineering students over the three other groups. Engineering students and student-teachers appear to have a more realistic relationship to everyday life than do the law students and medical students who show an uncommon preoccupation with abstract concepts.

Engineering students seem to use their creative energies more productively than the other three groups, who show an unusually high level of aspiration with ambitions outstripping the creative resources.

The impulse life of the engineering students is subordinate to their value system while law, medical and teacher training students are ruled more by immediate needs for gratification rather than by long range goals. All the four groups seem to give easy vent to their emotions in outer reality and feel and act appropriately to the social demands of the situation. Greater socialised control is shown by engineering students. Engineering students react to emotional situations with emotional involvement as well as affectional considerateness for others, whereas student teachers seem to be more extensive in their emotional reactivity and are guided and controlled less by affectional sensitivity. In case of all the four groups constrictive control plays a greater role, much more in the case of law and medical students.

The tendency toward introversiveness is more pronounced among engineering students. Law, medical and teacher training students show an ambivalent balance with tendency toward introversiveness.

Marked anxiety is not indicated for any of the groups. However, law, medical and teacher training students show tensions, frustrations and conflicts to some extent.

Engineering students, law students and student-teachers show a fairly wide range of interests, while medical students show a rather limited range.

In terms of general adjustment the group of engineering students is by far the best adjusted, the other three groups fall safely within the normal range.

Comparison with other studies

The findings of this study in respect of engineering students is in agreement with those of Harrison, Tomblen and Jackson[1] who investigated personalities of 100 mechanical engineers by means of projective techniques and noted some definite trends which characterise mechanical engineers. Besides other qualities they were found to be emotionally stable, goal oriented, realistic in approach to problems and socially responsive. Burgess (1953) studied over-achievers in the engineering curriculum with the help of projective techniques and found them to be intellectually adaptive and more realistic in approach to problems. The result of this investigation is somewhat different from that of Anne Roe[2] who reported that the engineering group tend to be disinterested in other persons and show somewhat compulsive, rigid, and anxious personality picture.

The characteristics of medical students found in this investigation resembles the picture of Biologists studied by Anne Roe[3]. She found the Biologists to be somewhat restricted, non-social, tending to dissociate themselves from interpersonal relationships in general and to be more concerned with form (high F%).

The Mean scores of some important Rorschach components found by R S. Devi (1958) and as found in the present investigation for the group of student-teachers are given in the following table:

Table VI. 19

Rorschach Components among Student-Teachers.

Rorschach Components	R.S. Devi(1958)	Present Investigation
R	32.66	30.28
W	8.36	8.06
D	19.74	15.00
d	4.24	3.30
S	1.60	1.72
F	16.02	14.50
FC	1.34	3.36

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[1] R. Harrison, D.T. Tomblen and T.A. Jackson, "Profile of Mechanical Engineer", *Personnel Psychology*, 1955, 8, 469–490.

[2] Anne Roe, *The Psychology of Occupations*, op. cit., p. 160.

[3] Ibid., p. 160.

(Continued)

Rorschach Components	R.S Devi (1958)	Present Investigation
CF	2.74	0.24
Sum C	4.50	3.48
M	3.86	2.46
FM	4.62	4.14
m	.78	.22
FK	1.62	.26
C'	.46	.72
A	7.18	9.36
H	4.36	3.84
W%	28.40%	30.61%
D%	59.02%	49.66%
d%	13.06%	8.38%
S%	4.82%	5.38%
F%	50.60%	53.52%

The perusal of the above table shows that there are marked differences in FC, CF, FK, D% and d% in the two studies. These differences may be attributed to the mode of administration of the test (group and individual), sample of different age groups and size, socio-cultural background of the subjects and the quality of the sample, that is R.S. Devi's sample consisted of most efficient student teachers while in this investigation the sample comprised of average group.

Summary and Conclusions

In this chapter an attempt has been made to evaluate and compare Intellectual level, Control, Creative potential, Introversive-Extratensive balance and Level of aspiration of engineering, law, medical and teacher training students through the Rorschach Ink-blot test. A comprehensive Rating Scale was prepared to evaluate these Rorschach components. Intra group relationships between these five Rorschach variables were studied in the four groups separately. To understand the structure of Rorschach traits in the various groups the four matrices were factorised by the Centroid method. Personality structures of these four groups were studied and compared with the help of psychograms and relationships among factors based on average Rorschach components.

Analysis of data in respect of Intellectual level revealed that engineering students were differentiated from law, medical, and teacher training students, while these three groups differed very little from one another. This indicated the superiority of engineering students over all other groups in intellectual level.

Comparison of different groups under study on Control revealed that there is no significant difference between engineering, law, medical students and student-teachers on this variable. This indicated that these four groups are almost similar in respect of Control

Creative potential was also found to be a discriminating index in this study, in which the medical students were differentiated from the engineering, law and teacher training students, while the last three groups did not reveal any significant difference between themselves. This indicated that the medical students do not have as much creative potential as the other three groups have.

In respect of Introversive-Extratensive balance only the law students and medical students have been differentiated, indicating that the former group is more introversive than the latter. All the four groups have also been found to have a tendency toward introversiveness.

The results of the comparison of different groups under consideration on level of aspiration showed that there is no significant difference between any two groups, suggesting that these groups are alike in respect of level of aspiration.

The factor analysis revealed that the Rorschach variables in all the four groups are overlapping, more so in the case of Intellectual level, Control, Creative potential and level of aspiration. The Introversive-Extratensive dimension stood out distinctly as a separate variable.

Comparative study of the four Psychograms and relationships among factors revealed that in terms of general adjustment the group of engineering students is by far the best adjusted, the other three groups fell within the normal range.

The general conclusion which can be drawn on the basis of the analysis of Rorschach test in the present investigation, is that there are significant differences between the four groups of professional students on some Rorschach variables. The largest differences were related to components indicative of intelligence, that is Intellectual level and Creative potential. All the four groups have been found to have a tendency toward introversiveness. Comparative study of personality structures of the four groups showed that though there is wide range of personality in each group, the engineering, law, medical and teacher training students showed definite characteristics of personality structure. Engineering and medical students have different patterns, while there are more similarities than differences between law students and student-teachers.

CHAPTER VII

PSYCHO-SOCIAL DYNAMICS OF PERSONALITY

In the process of growing up various forces, both internal (psychological) and external (environmental or social) act on the individual. The dynamic interaction of these psycho-social forces determines the personality make up of the individual. TAT is an important personality test, which, through the imaginative products of the subject, helps us to understand the nature of these forces. In the following pages an attempt has been made to assess and compare psycho-social dynamics of personality of engineering, law, medical and teacher training students through the Thematic Apperception Test.

The Thematic Apperception Test

Introduction

The Thematic Apperception Test, commonly referred to as TAT is another widely used projective test of personality. In popularity it stands only next to Rorschach. TAT was introduced in 1935 by Murray and Morgan.[1] This test, they said, was based on the fact that an individual confronted with an ambiguous social situation and required to make up an imaginative story was likely to project and to reveal his own personality in this process.

According to Rotter[2] "the Thematic Apperception Test is a projective device which purports to reveal the basic personality characteristics of individuals by interpreting the stories they tell or imagine about a series of pictures". Rosenzwig[3] pointed out that "this projective method (TAT) is intended to reveal the needs, conflicts and traits that underlie the behaviour of the individual. Some of these trends may not even be known to the person himself. Since they are implicit rather than explicit in his living the subject supposedly projects these underlying tendencies in his fantasy productions". Benton[4] stated that "the purpose of the test is to elicit the dominant 'thema' in the subject's life i.e., the drives, tensions, relationships, conflicts and environmental presses that have played a determining role in his behaviour."

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[1] H.A.Murray and C.D. Morgan, "A Method for Investigating Fantasies: the Thematic Apperception Test", *Arch. Neurol. Psychiat.*, 1935, 34, 289-306.

[2] Julian B. Rotter, Review of the Test, In the *Third Mental Measurements Yearbook*, p. 103.

[3] S. Rosenzwig, *Psychodiagnosis*, New York: Grune and Stratton, 1949, p. 125.

[4] Arthur L. Benton, Review of the Test, In the *Third Mental Measurements Yearbook*, p. 103.

Henry[1] remarked that "the Thematic Apperception Technique is a device for the analysis of the underlying psychological needs and feelings, and the ways in which they are handled by the individual". Murray[2] stated that, "the purpose of this procedure is to stimulate literary creativity and thereby evoke fantasies that reveal covert and unconscious complexes." Watson[3] said that "the Thematic Apperception Test presents itself as a technique for the study of the fantasies of the individual. It provides a means whereby the interrelated traits, attitudes, needs and conflicts underlying his behaviour may be revealed." According to Thompson[4] "the TAT will be found useful in any comprehensive study of personality". Wittenborn[5] pointed out that "In almost any situation in which serious effort is made to understand the individual the Thematic Apperception Test in some of its possible modifications will be found genuinely good and useful technique."

Test Material

The test consists of thirty standardized pictures and one blank card. The pictures are semistructured, expressions are sufficiently ambiguous and actions poorly defined so that maximum projection is possible. Some of the pictures in this series are specially for boys (marked B), some specially for girls (marked G), some for males over fourteen (M) and some for females over fourteen (F), and some for all groups. The maximum number of pictures used with any subject is twenty and these are administered in two sessions, ten each time. In general practice, however, examiners use only ten pictures, selected for the particular purpose.

Indian Adaptation[6]

As the original TAT pictures are essentially foreign in content, Bureau's adaptation of the pictures have been used in the present study. Faces and dresses with minor changes in the background have been Indianised in these pictures and these facilitate proper identification by the subject. According to Thompson[7] "identification is likely to be greatest when the pictorial material reflects the culture of the individual". In one study Light[8] found that racial attitudes and prejudices were revealed in response to the modified TAT pictures (Thompson's modification), and where such attitudes existed there seemed to be some impairment in projection.

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[1] William E. Henry, *The Analysis of Fantasy*, New York: John Wiley & Sons, Inc., 1956, p. 9.

[2] H.A. Murray, *Explorations in Personality*, New York: Oxford University Press, 1959, p. 530.

[3] R.I. Watson, *The Clinical Method in Psychology*, Science Edition, p. 436.

[4] Charles E. Thompson, *Manual for the Thematic Apperception Test*, Cambridge, Massachusetts: Harvard University Press, 1949, p. 5.

[5] J.R. Wittenborn, Review of the Test in the *Third Mental Measurements Yearbook*, p. 104.

[6] *Manual for the Thematic Apperception Test* (*Bureau's Adaptation*) Publication No. 10, Bureau o Psychology, U.P. Allahabad, 1962.

[7] C.E. Thompson, "The Thompson Modification of the Thematic Apperception Test", *Journal of Projective Techniques*, 1949, 13, p. 478.

[8] B.H. Light, "A further test of the Thompson TAT Rationale", *Journal of Abnormal and Social Psychology*, 1955, 51, p. 150.

Selection of Cards

In the selection of pictures the investigator followed the criteria suggested by Henry[1] as given below:

1. The criterion of latent stimulus meaning
2. The criterion of basic interpersonal relation
3. The criterion of reality representation
4. The criterion of intensity
5. The criterion of flexibility and ambiguity
6. The criterion of culture-appropriate symbols
7. Criteria for pictures for special problems
   (Professional Education).

Taking into consideration these criteria the writer has used the following ten cards[2] including one blank card in the present study:

1, 2, 3BM, 6BM, 13MF, 7BM, 8BM, 4, 17BM and 16.

For the production of maximum thought content and free expression of inner dynamics the pictures were arranged and given to the subjects in the order mentioned above.

Reliability

TAT reliability has been studied in different ways. Interpreter agreement has been one of the most significant methods for the same. Harrison and Rotter[3], independently of each other, rated the protocols of seventy officer candidates for emotional maturity and stability and found a correlation of .77. Combs[4] reported a reliability study on the ratings made by four judges on ten protocols. The mean percentage of agreement between judges was 60 percent. Friedman[5] determined correlations between different interpreter's ideas about the characteristics of the TAT 'hero'. The average coefficient was .74. Sanford[6] had four judges rate ten subjects on their needs and press and reported a rank-order correaltion of .57 for needs and .54 for press. In searching the TAT literature

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[1] W.E. Henry, *The Analysis of Fantasy*, New York: John Willey & Sons. Inc., 1956, pp. 47-53.

[2] Description of these pictures is given in the *Manual for the Thematic Apperception Test* (by H.A. Murray), Cambridge, Mass. Harvard University Press, 1943, pp. 18-20.

[3] R. Harrison and J.B. Rotter, "A Note on the Reliability of the Thematic Apperception Test", *Journal of Abnormal and Social Psychology*, 1945, 40, 97-99.

[4] A.W. Combs, "The Validity and Reliability of Interpretation from Autobiography and Thematic Apperception Test", *Journal of Clinical Psychology*, 1946, 2, 240-247.

[5] Ira Friedman, "Objectifying the Subjective: A Methodological Approach to the TAT", *Journal of Projective Techniques*, 1957, 21. 243-247.

[6] R.N. Sanford, Physique, Personality and Scholarship, *Monographs of the Society for Research in Child Development*, 1943, 8, p. 705.

Jensen[1] found 15 estimates of scoring reliability based on sound statistical methods. These reliability coefficients ranged from .54 to .91 with an average of .77 .

The test-retest and split-half TAT reliabilities have also been found to be significant. Tomkins[2] tested and retested 45 women subjects at various intervals from two to ten months, each time using a group of fifteen comparable subjects. After two months the reliability coefficient was .80, after six months it was .60 and after ten months .50. Lindzey and Herman[3] used only four cards and retested the subjects after two months. The average reliability coefficient was found to be .77.

Using the split half method, Sanford[4] reported reliability coefficients of .48 and .46 for need-press ratings. McClelland[5] found a reliability correlation of .70 for the achievement need derived from selected pictures. Tomkins[6] collected four hundred stories told by one subject over a period of ten months. The stories were divided into two groups and rated by different interpreters independently. The obtained correlation coefficient was .91. On the basis of these studies it can be concluded that the TAT is a fairly reliable instrument for the assessment of personality.

Validity

Inspite of the difficulties, several attempts at validation of the TAT have been made and different methods have been employed. In a matching study Harrison[7] administered the TAT to 40 psychiatric patients, without knowing their histories. His inferences were found to be correct in 82 percent cases and in about 75 percent of the cases diagnostic classification was also correct. TAT has been compared with other materials such as past history and dreams and the extent to which these find reflection in the TAT protocol has been determined. Combs[8] compared TAT stories written by college students with their written autobiographies. He found that approximately thirty percent of the stories included significant thema drawn from their own life experience. Sarason[1] investigated the degree of correspondence between dream content and TAT stories and found that the extent of similarity was great. Harrison[2] has reported sufficiently close agreement between the Rorschach and the TAT. Morgan and Murray[3] reported that the TAT stories of one patient showed all the chief characteristics revealed by five months of psychoanalysis.

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[1] A.R. Jensen, Review of the Thematic Apperception Test, In the *Fifth Mental Measurements Yearbook*, p. 165.

[2] S.S. Tomkins, *The Thematic Apperception Test: The Theory and Technique of Interpretation*, New York: Grune & Stratton, 1955, p. 6.

[3] G. Lindzey and P.S. Herman, "Thematic Apperception Test: A Note on Reliability and Situational Validity", *Journal of Projective Techniques*, 1955, 19, 36-42.

[4] R.N. Sanford, Physique, Personality and Scholarship, *Monographs of the Society for Research in Child Development*, 1943, 8, p. 705.

[5] D.C. McClelland, "The Projective Expression of Needs: The Effect of the Need for Achievement on Thematic Apperception, *Journal of Experimental Psychology*, 1949, 39, 242-255.

[6] S.S. Tomkins, *The Thematic Apperception Test: The Theory and Technique of Interpretation*, p. 6.

[7] R.Harrison, "Studies in the use and Validity of the Thematic Apperception Test with Mentally Disordered Patients: A Quantitative Validity Study", *Character and Personality*, 1940, 9, 122-133.

[8] A.W. Combs, "The Validity and Reliability of Interpretation from Autobiography and Thematic Apperception Test", *Journal of Clinical Psychology*, 1946, 2, 240-247.

Comparison of TAT reports have been made with groups of known differences and satisfactory results have been obtained. Davison[4] found significant differences between the TAT reports of psychoneurotics and psychotic patients. Murray and Stein[5] rated leadership qualities in a group of officer candidates on the basis of TAT stories. These ratings correlated fairly well (rho = .65) with the judgments of their superior officers. TAT responses have shown considerable validity in studies of Adolescent delinquents[6] and in studies of culture personality relations.[7] McClelland[8] administered four TAT pictures to college students under four experimentally controlled conditions i.e., "relaxed", "neutral", "failure" and "success-failure" and found significant differences in regard to the need for achievement under all the four conditions.

All these studies indicate that TAT is a valid instrument for the asssesment of personality. Summarizing the validity studies of TAT Watson[9] says "With all the diversity of methods of interpretation, population studied, and methods of treating data, there is one outstanding fact: in varying degrees, consistently positive results were obtained, pointing towards validities of TAT."

Applicability

The Thematic Apperception Test has recently become one of the primary instruments for probing the thought content and ideational process of individuals. It has been used in the study of wide variety of psychological problems both clinical and non-clinical.[1] According to Tomkins[2] "The TAT has proven a useful instrument in the exploration of such diverse areas as child development, social attitudes and sentiments, assessment of military personnel and most recently culture and personality". Discussing its use in vocational guidance and selection Super[3] says "It has promise as a research technique for the study not only of personality adjustment, but more specially, of the determinants of vocational choice and satisfaction".

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[1] S.B. Sarason, "Dreams and Thematic Apperception Test Stories", *Journal of Abnormal and Social Psychology,* 1944, 39, 486–492.

[2] R. Harrison, "The Thematic Apperception and Rorschach Methods of Personality Investigation in Clinical Practice", *Journal of Psychology,* 1943, 15, 49–74.

[3] C.D. Morgan and H.A. Murray, "A Method for Investigating Phantasies: The Thematic Apperception Test", *Arch. Neurol. and Psychiat,* 1935, 34, 289–306.

[4] A.H. Davison, "A Comparison of the Fantasy Productions on the TAT of sixty Hospitalized Psychoneurotic and Psychotic Patients", *Journal of Projective Techniques,* 1953, 17, 20–33.

[5] H.A. Murray and M.I. Stein, "Note on the Selection of Combat Officers", *Psychosomatic Medicine,* 1943, 5, 386–391.

[6] A.A. Hartman, "An Experimental Examination of the Thematic Apperception Technique in Clinical Diagnosis", *Psychological Monographs,* 1949, 63, No. 303.

[7] W.E. Henry, "The Thematic Apperception Technique in the Study of Culture–Personality Relations", *Genetic Psychology Monograph,* 1947, 35, 1–134.

[8] D.C. McClelland, "The Projective Expression of Needs: The Effect for the Need of Achievement on Thematic Apperception", *Journal of Experimental Psychology,* 1949, 39, 242–255.

[9] R.I. Watson, *The Clinical Method in Psychology,* p. 506.

The number of studies where TAT has been used to assess occupational patterns or differences have been meagre as compared to Rorschach. A list of occupational categories in which this test has been employed is given below:

Anthropologists (Roe -1953)
Artists (Roe - 1946)
Aviation Cadets (Super – 1944, Guilford – 1948)
Biologists (Roe – 1949)
Combat Officers (Murray and Stein – 1943)
Executives (Gardner – 1948, Henry – 1949)
Medicalmen (Luborsky, Holt and Morrow – 1950)
Physical Scientists (Roe – 1951)
Psychologists (Roe – 1953)
Psychiatrists (Holt and Luborsky – 1952)
Research Scientists (Roe – 1951)
Strategic Services – Officers (Haufmann – 1948, Murray – 1948)

Administration

The test was administered individually to all the subjects by the author himself and was completed in one session. The subjects were seated comfortably on a chair facing the examiner. The cards were arranged according to the order mentioned earlier and were given to the subjects with the following instructions:

"I am going to show you some pictures and your task will be to make up a story for each. In making up the stories you have to keep in mind four points:

1) What has led up to the event shown in the picture?
2) What is happening at the moment in the picture?
3) What the characters are feeling and thinking? and
4) What will be the outcome?

Express your thoughts as they come to your mind. You can devote about five minutes to each story. Do you understand? Here is the first picture."

A Comprehensive list is given in W.E. Henry, *The Analysis of Fantasy*, (Bibliography), 274-302.

[2] S.S. Tomkins, *The Thematic Apperception Test: The Theory and Technique of Interpretation*, p. 4.

[3] D.E. Super, *Appraising Vocational Fitness*, p. 524.

Special instruction was given for the Blank card. The examiner said "This is the last card, there is no picture on it. Imagine some picture there and then make a story keeping in view the above mentioned four points".

The subjects were asked to write the stories themselves and for each story they had to note down the serial number given at the back of each picture. Because the subjects were normal intelligent adults this method of recording responses was considered suitable. Eron and Rotter[1] and Tomkins[2] reported that there are no important differences between the thematic content of written and oral stories. The reaction time and total time for each story was recorded by the examiner on the analysis sheet.

Enquiry

The enquiry was conducted when all the ten stories were completed by the subject. Enquiry was made on the following points wherever necessary: (1) Compliance with the instructions (2) Plot (3) Identification and empathy (4) Ambiguities (5) Omissions (6) Introduced content and (7) Other special features such as pauses, hesitations, rejections and the like.

Technique of Scoring Stories

A number of different scoring schemes have been developed for the Thematic Apperception Test. Most of these schemes are elaborate, time consuming and suitable for clinical use. Originally Murray[3] analysed the stories according to the needs and presses of the hero. Tomkins[4] suggested vector, level and condition analysis of thema. Stein[5] Advocated clinical analysis of stories. Rapaport[6] emphasised the diagnostic use of the TAT, the stress being mainly on the formal characteristics of the stories. Henry[7] suggested an elaborate scoring system which covers the important variables of form as well as content. Shneidman[8] presented fifteen TAT scoring systems used by different specialists namely Megda Arnold, Betty Aron, Leopold Bellak, Leonard Eron, Reuben Fine, A. Arthur Hartman, Robert R. Holt. Walther Joel and David Shapiro, Seymour Klebanoff, Sheldon Korchin, Jose I. Lagasa, Julian B. Rotter and Shirley Jessor, Helen D. Sargent, Percival M. Symonds and Ralph K. White. Majority of these approaches are designed exclusively for clinical use, while some were developed for research purposes. The use of any method depends largely upon the object with which the test is used. Considering the need of the present study, it was decided to adopt an eclectic approach. This eclectic approach included the method of analysis of form variables by Henry, need rating of Murray and rating of outcome and interpersonal relationships suggested by Eron. The details of scoring will be described in the subsequent pages.

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[1] L.D. Eron and M.A. Rotter, "Comparison of Two Methods of Administration of the Thematic Apperception Test", *Journal of Consulting Psychology*, 1951, 15, 55-61.

[2] Tomkins, op. cit., p. 24.

[3] Murray, *Explorations in Personality*, op. cit.

[4] Tomkins, *The Thematic Apperception Test: The Theory and Technique of Interpretation*, op. cit.

[5] Morris, I. Stein, *The Thematic Apperception Test: An introductory Manual for its Clinical use with Adult Males*, Cambridge, Mass, Addison-Wesley, 1954.

[6] Rapaport, *Diagnostic Psychological Testing*, Vol. II, op. cit.

[7] Henry, *The Analysis of Fantasy*, op. cit.

[8] Edwin S. Shneidman, *Thematic Test Analysis*, New York: Grune and Stranton, 1951.

Scorer Reliability

In order to determine the reliability of the scoring in the present study, two protocols each of engineering, law, medicine and teacher training students (8 protocols in all), consisting of 80 stories were selected at random from each group and mixed together. These stories were given to an experienced psychologist working in the Bureau of Psychology, U.P., Allahabad, and having an experience of about fifteen years in TAT analysis, for scoring. The stories were rated on a five point scale on (1) three formal characteristics, namely, organization, imagination and language (2) interpersonal relationships (3) outcome and (4) needs, ten in number. The product moment correlations between the ratings of the psychologist and the investigator were as follows:

1. Formal characteristics	.66
2. Interpersonal relationships	.78
3. Outcome	.81
4. Needs	.72

The ratings of the investigator and the psychologist intercorrelated .74 on an average on all the variables.

TAT Analysis Blank

The investigator prepared a TAT analysis Blank for scoring the TAT stories. This Blank is divided into two broad heads:

1. Analysis of Form
2. Analysis of Content

Analysis of Form

Form refers to how the story teller said the stories. According to Henry "In this 'way of telling' lies the key to the habitual structuring of the world which the subject perceives and his habitual response to this structuring.[1] Three important form characteristics of stories have been evaluated in the present study. They are:

(i) Organization
(ii) Imagination
(iii) Language

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[1] Henry, op. cit., p. 55.

Organization

Organization refers to the system or order which the subject puts into his stories and the ways in which the various aspects of form are interrelated. Judgment of adequate organization is made in the light of presence of the three aspects of the story in proper proportion and sequence that is a beginning, a middle and an end and also the past, present and the future. Organization also includes coherence and logic present in relating the various ideas expressed in the stories.

The degree of organization present in a particular story is rated on a five point scale. The organization is considered to be of a superior level if there is joining up of the major and minor details of the picture with imagined elaborations into a connected narration giving past, present and future in a logical or well structured form. On the other hand organization is considered to be of a very poor level if there is lack of internal consistency, absence of relevance to the stimulus material and mere listing of facts of the picture. Superior, good, ordinary, poor and very poor organizations were given ratings of 5, 4, 3, 2 and 1 respectively.

Imagination

The level of Imagination of the subject has been evaluated on the basis of the length of stories, range of imagination, freedom of productivity and depth of imagination. Rich, abstract, original and creative imagination, high order of richness of productivity, long stories with wide range of imagery was given a rating of 5, while sheer picture description, short story with too much reduced productivity, poor range of imagery and immature phantasy was given a rating of 1. Middle three categories 4, 3, and 2 are judged with reference to the proximity to either ends.

Language

In rating language the following points have been noted: language usage from the literary and grammatical viewpoint, verbal richness of language, choice of words, peculiarities in the language such as queer expressions. If the sentences are complete, grammatically correct, and flow smoothly, language is literary, high flown and decorative, level of vocabulary rich and choicest words have been used the language is said to be superior and a rating of 5 has been given. If the sentences are incomplete, the language is broken and grammatically wrong, the level of vocabulary poor, factual and neutral words have been mostly used, it is said to be very poor and a rating of 1 has been given. Other rating, that is 4,3 and 2 were adjusted accordingly.

Analysis of Content

The following variables were studied under analysis of content:

(i) Interpersonal Relations
(ii) Outcome
(iii) Needs

Interpersonal Relations

According to Bellak[1] "TAT pictures are best seen psychologically as a series of social situations and interpersonal relations". The interpersonal relations are properly understood by studying as to how the central figure in the story is behaving towards other figures appearing in the form of father, mother, brother, sister, partners and the like. Interpersonal relations has been rated on a scale as follows: Very cordial relationships has been assigned a rating of +2, cordial relationships a rating of +1, neutral 0, hostile, rating of -1, very hostile a rating of-2, and ? where no interpersonal relations has been shown or no story has been written.

Outcome

Outcome is another important constituent of thema. It indicates the basic mood of the subject. In case most of the outcomes are happy and encouraging they indicate optimistic outlook of the subject, while unhappy outcomes indicate pessimistic outlook. In scoring the outcomes of the stories the rating scale suggested by Eron[2] was followed. In this rating scale great success or happiness has been given a rating of +2, moderate success or happiness a rating of +1, balance of happy and unhappy situation a rating of 0, some frustration or disappointment a rating of -1 and complete failure or extreme remorse a rating of -2 and ? for indeterminate, vague or conditional outcomes.

Needs

Needs signify forces, drives or urges emanating from within. According to Murray[3] "A need is the force within the organism which determines a certain trend or major effect." Various lists of basic psychological needs have been compiled. In this study only those needs which were considered significant to throw light on the inner dynamics of personality of the four groups of professional students under study were selected. These needs are the following: 1. Achievement 2. Deference 3. Abasement 4. Autonomy 5. Aggression 6. Dominance 7. Nurturance 8. Succorance 9. Affiliation and 10. Counteraction. The definitions of these needs as given by Murray in his book Exploration in Personality and followed in this study are given in Appendix E.

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[1] L.B. Bellak, *A Guide to the Interpretation of the Thematic Apperception Test*, New York, 1951, p. 4.

[2] Shniedman, *Thematic Test Analysis*, op. cit., p. 58.

[3] Murray, *Explorations in Personality*, op. cit., p. 61,

The strength of each variety of need manifested by the hero or heroes was rated on a five point scale (1 to 5) in each story in terms of Murray's scheme. The criteria of strength for rating were intensity, duration, frequency and importance in the plot. "The slightest suggestion of a need was given a mark of 1, whereas an intense form (e.g., violent anger) or the continued or repeated occurrance of a milder form (e.g., constant quarrelling) was given a score of 5. Marks of 2, 3 and 4 were given for intermediate intensities of expression". After all the ten stories were scored in this way the total of each need was obtained by adding up the marks. In this scheme of marking the lowest score for the ten stories for one variable could be 0 and the highest 50.

Statistical Procedure

The data collected in this study were either of the 1 to 5 rating type or—2 to +2 and ? rating type. In cases of those variables in which the data was of the 1 to 5 rating type that is (1) Three Form Variables namely Organization, Imagination and Language and (2) Ten Needs, the 't' test for testing the significance of difference between two uncorrelated means was used. Variances were compared for homogeneity before obtaining the value of 't' and the application of t-test was modified where significant difference between the variances were obtained. The Formule used for the calculation of 't' and F are the same as given in the Chapter III. The levels of confidence considered significant are also the same.

The second method, that is testing the divergence by the Chi-square technique was used in respect of the following two variables:

1. Interpersonal Relationships
2. Outcome

In case of both these variables frequencies under six categories, that is +2, +1, 0, –1, –2 and ? for each story were noted down and two groups were compared at a time with the help of the Chi-square test. The levels of confidence adopted as the criteria of significance is the same as those followed in the previous chapters.

Analysis of Data[1]

Engineering, law, medical and teacher training students have been compared with each other on the three form variables described earlier.

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[1] Data of T.A.T are given in Appendix A.

Organization

The following table shows the results of the comparison of different groups under study on Organization:

Table VII. 1

Differentials in Organization

S. No.	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	34.70	2.70	2.25**	5.04	0.01
	Law Stu.	32.38	1.80			
2.	Eng. Stu.	34.70	2.70	1.75**	9.25	0.01
	Med. Stu.	30.26	2.04			
3.	Eng. Stu.	34.70	2.70	1.00	5.60	0.10
	Stu. Tea.	31.62	2.70			
4.	Law Stu.	32.38	1.80	1.28	5.43	0.01
	Med. Stu.	30.26	2.04			
5.	Law Stu.	32.38	1.80	2.25**	1.65	NS
	Stu. Tea.	31.62	2.70			
6.	Med. Stu.	30.26	2.04	1.75**	2.83	0.01
	Stu. Tea.	31.62	2.70			

The study of the above table indicates that except Group No. 5 that is law students and student teachers all the groups have been differentiated on this variable. Engineering students are very significantly different from the law, medical and teacher training students, while the medical students are very significantly different from the law students and student teachers. Comparison of the mean scores on organization shows that law, medical and teacher training students have less power of organization than the engineering students while medical students have still less power of organization than the law students and teacher training students. The overall superiority of engineering students on organization is obvious in these comparisons.

Imagination

Table VII. 2

Differentials in Imagination

S.No.	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	33.78	2.30	1.56*	4.00	0.01
	Law Stu.	32.10	1.84			
2.	Eng. Stu.	33.78	2.30	1.30	6.14	0.01
	Med. Stu.	31.14	2.02			
3.	Eng. Stu.	33.78	2.30	1.83**	5.56	0.01
	Stu. Tea.	31.50	1.70			
4.	Law Stu.	32.10	1.84	1.21	2.46	0.05
	Med. Stu.	31.14	2.02			
5.	Law Stu.	32.10	1.84	1.17	1.67	NS
	Stu. Tea.	31.50	1.70			
6.	Med. Stu.	31.14	2.02	1.41	0.97	NS
	Stu. Tea.	31.50	1.70			

The above table indicates a similar trend as found in the case of organization. It will be noted that engineering students again yielded significantly higher scores on imagination than the law, medical and teacher training students, while law students scored significantly higher than the medical students. No significant difference was found between law students and student teachers and between medical students and student teachers. This again shows the superiority of engineering students over all other groups on Imagination.

Language

Table VII. 3 shows the results of the application of t-test to the differences yielded by different groups under study on Language.

Table VII.3

Differentials in Language

S.No	Groups Compared	Mean	S.D.	F	t	P
1.	Eng. Stu.	32.22	2.18	1.07	1.24	NS
	Law Stu.	32.78	2.26			
2.	Eng. Stu.	32.22	2.18	1.04	1.27	NS
	Med. Stu.	31.66	2.22			
3.	Eng. Stu.	32.22	2.18	1.42	3.17	0.01
	Stu. Tea.	33·74	2.60			
4.	Law Stu.	32.78	2.26	1.04	2.49	0.05
	Med. Stu.	31.66	2.22			
5.	Law Stu.	32.78	2.26	1·32	1.96	NS
	Stu. Tea.	33.74	2.60			
6.	Med Stu.	31.66	2.22	1.37	4.24	0.01
	Stu. Tea.	33.74	2.60			

It will be observed that the trend is somewhat different in case of this variable. Student teachers exhibited significantly higher score on language than the engineering students and medical students while law students showed significantly higher score than the medical students. This shows the overall superiority of student teachers on language followed by law students. This suggests that student teachers and law students have better linguistic ability than engineering and medical students.

Interpersonal Relations

The following table shows the distribution of the frequency of stories of different interpersonal relations occuring among engineering, law, medical and teacher training students:

Table VII. 4

Frequency of Stories of Different Interpersonal Relations in the Four Groups

Group	+ 2	+ 1	0	–1	–2	?
Eng. Stu.	23	209	105	114	29	20
Law Stu.	35	193	119	109	25	19
Med. Stu.	25	170	134	118	31	22
Stu. Tea.	39	205	128	97	17	14

To test the significance of divergence between different groups under consideration on the frequency of stories of different interpersonal relations, whose distribution is given in Table VII. 4 Chi-square values were calculated. Two groups were compared at a time. The chi-square values, degrees of freedom and levels of significance are given in the following table:

Table VII. 5

Comparison of Different Groups under study on the Frequency of Stories of Different Interpersonal Relations

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	4.44	5	NS
2.	Eng. Stu. & Med. Stu.	7.86	5	NS
3.	Eng. Stu. & Stu. Tea.	11.96	5	0.05
4.	Law Stu. & Med. Stu.	5.20	5	NS
5.	Law Stu. & Stu. Tea.	3.88	5	NS
6.	Med. Stu. & Stu. Tea.	14.38	5	0.05

The above table reveals that the difference between engineering and teacher training students and between medical and teacher training students is significant at 0.05 level. A perusal of the distribution of the frequency of stories in table VII. 4 shows that there is preponderence of stories of cordial interpersonal relations in all the four groups, more so in the case of student teachers. Student teachers thus exhibit better interpersonal relationships than the engineering and medical students. The overall superiority of student teachers on interpersonal relations is evident in all these comparisons.

Outcome

In Table VII. 6 appear the distribution of the frequency of stories written by the engineering, law, medical and teacher training students on different types of outcome.

Table VII. 6

Frequency of Stories of Different Outcomes

Group	+2	+1	0	–1	–2	?
Eng. Stu.	46	157	130	113	37	17
Law Stu.	39	146	152	97	42	24
Med. Stu.	34	138	148	105	39	36
Stu. Tea.	42	145	139	109	34	31

The Chi-square values calculated to evaluate the agreement between any two groups on the frequency of stories of different outcomes are given in the following table:

Table VII. 7

Comparison of Different Group's under study on the Frequency of Stories of Different Outcomes

S. No.	Groups Compared	X^2	df	P
1.	Eng. Stu. & Law Stu.	5.44	5	NS
2.	Eng. Stu. & Med. Stu.	11.34	5	0.05
3.	Eng. Stu. & Stu. Tea.	5.24	5	NS
4.	Law Stu. & Med. Stu.	3.46	5	NS
5.	Law Stu. & Stu. Tea.	3.12	5	NS
6.	Med. Stu. & Stu. Tea.	2.04	5	NS

The Chi-square values in Table VII. 7 indicate that only engineering students and medical students have been differentiated on outcome at 0.05 level. The distribution of frequency of stories of different outcomes given in Table VII. 6 shows that engineering students have given more stories of happy outcomes than the medical students. This suggests that engineering students are more optimistic than the medical students. Law, medical and teacher training students did not reveal any significant difference between themselves on outcome.

Needs

Mean, S.D., F, t and P values of the 10 need variables on which engineering and law students have been compared are presented in Table VII. 8

Table VII. 8

Comparison of Engineering and Law Students on Needs

S. No.	Needs	Eng. Stu.		Law Stu.		F	t	p
		Mean	S.D.	Mean	S.D.			
1	Achievement	15.46	4.59	8.70	3.12	2.16**	8.85	0.01
2.	Deference	7.96	3.36	6.94	3.14	1.14	1.57	NS
3.	Abasement	5.58	3.18	7.34	3.32	1.09	2.71	0.01
4.	Autonomy	8.52	2.34	9.82	2.82	1.45*	2.50	0.05
5.	Aggression	5.90	2.60	6.06	2.72	1.09	0.30	NS
6.	Dominance	5.18	2.90	5.90	3.46	1.42	1.11	NS
7.	Nurturance	5.14	2.84	6.34	2.68	1.12	2.14	0.05
8.	Succorance	5.06	2.94	5.26	3.12	1.13	0.33	NS
9.	Affiliation	3.86	2.66	3.38	2.26	1.38	0.96	NS
10.	Counteraction	4.98	2.76	3.58	2.34	1.39	2.69	0.01

Table VII. 8 shows that the engineering and law students differ significantly from each other on Achievement, Abasement, Autonomy, Nurturance and Counteraction. The difference on Achievement, Abasement and Counteraction is highly significant, while on the other two needs the difference is only significant.

A comparison of the Mean scores of the significant needs reveals that the engineering students manifested a greater need for Achievement and Counteraction and less need for Abasement, Autonomy and Nurturance than did the law students. The Mean score of the law students, on the other hand, are greater on Abaesment, Autonomy and Nurturance than the engineering students.

Table VII. 9

Comparison of Engineering and Medical Students on Needs

S. No.	Needs	Eng. Stu.		Med. Stu.		F	t	P
		Mean	S.D.	Mean	S.D			
1.	Achievement	15.46	4.59	11.50	3.90	1.38	4.60	0.01
2.	Deference	7.96	3.36	7.34	3.44	1.05	0.91	NS
3.	Abasement	5.58	3.18	7.50	2.68	1.41	3.10	0.01
4.	Autonomy	8.52	2.34	5.50	2.98	1.62*	5.59	0.01
5.	Aggression	5.90	2.60	5.34	2.56	1.03	1.08	NS

S. No.	Needs	Eng. Stu.		Med Stu		F	t	P
		Mean	S.D.	Mean	S.D.			
6.	Dominance	5.18	2.90	5.58	2.66	1.19	0.71	NS
7.	Nurturance	5.14	2.84	6.70	2.86	1.01	2.74	0.01
8.	Succorance	5.06	2.94	5.46	2.80	1.10	0.69	NS
9.	Affiliation	3.86	2.66	3.58	2.38	1.25	0.55	NS
10.	Counteraction	4.98	2.76	4.14	2.62	1.11	1.56	NS

A comparison of engineering and medical students on needs in table VII. 9 revealed that significant difference exists in case of four needs, namely, Achievement, Abasement, Autonomy and Nurturance. The difference is highly significant in respect of all these variables. In case of remaining six needs, the significant difference does not exist at the assumed level of confidence.

Inspection of the Mean scores shows that the engineering students exhibited a significantly higher need on Achievement and Autonomy than the medical students, while on Abasement and Nurturance medical students manifested greater need than the engineering students.

Table VII. 10

Comparison of Engineering Students and Student-Teachers on Needs

S. No.	Needs	Eng. Stu.		Stu. Tea.		F	t	P
		Mean	S.D.	Mean	S.D.			
1.	Achievement	15.46	4.59	8.38	3.72	1.52*	8.43	0.01
2.	Deference	7.96	3.36	6.86	3.10	1.17	1.69	NS
3.	Abasement	5.58	3.18	10.96	3.78	1.41	7.58	0.01
4.	Autonomy	8.52	2.34	5.14	2.58	1.22	6.76	0.01
5.	Aggression	5.90	2.60	5.58	2.38	1.19	0.64	NS
6.	Dominance	5.18	2.90	5.58	2.44	1.41	0.74	NS
7.	Nurturance	5.14	2.84	8.54	3.36	1.40	5.48	0.01
8.	Succorance	5.06	2.94	6.02	2.98	1.03	1.60	NS
9.	Affiliation	3.86	2.66	4.22	2.40	1.23	0.71	NS
10.	Counteraction	4.98	2.76	3.98	2.42	1.34	1.92	NS

The probability values in Table VII. 10 indicate that the engineering students differ significantly from the student-teachers on four needs viz., Achievement, Abasement, Autonomy and Nurturance and the difference is highly significant in respect of all these needs. The other differences on the remaining six needs did not meet the criterion of 0.05 for significance. It will be observed that engineering students yielded higher needs in Achievement and Autonomy, while student-teachers revealed higher needs in Abasement and Nurturance.

Table VII. 11

Comparison of Law and Medical Students on Needs

S. No.	Needs	Law Stu.		Med. Stu.		F	t	P
		Mean	S.D.	Mean	S.D.			
1.	Achievement	8.70	3.12	11.50	3.90	1.56*	3.94	0.01
2.	Deference	6.94	3.14	7.34	3.44	1.20	0.61	NS
3.	Abasement	7.34	3.32	7.50	2.68	1.53*	0.26	NS
4.	Autonomy	9.82	2.82	5.50	2.98	1.12	7.45	0.01
5.	Aggression	6.06	2.72	5.34	2.56	1.13	1.36	NS
6.	Dominance	5.90	3.46	5.58	2.66	1.69**	0.52	NS
7.	Nurturance	6.34	2.68	6.70	2.86	1.14	0.64	NS
8.	Succorance	5.26	3.12	5.46	2.80	1.24	0.34	NS
9.	Affiliation	3.38	2.26	3.58	2.38	1.11	0.42	NS
10.	Counteraction	3.58	2.34	4.14	2.62	1.25	1.12	NS

Table VII. 11 shows the results of the application of t-test to the differences yielded by law and medical students on the ten needs. It is evident from the table that these professional students differ in only two needs, that of achievement and Autonomy. The obtained t values in other eight needs are much less than the value of 0.05 level of confidence. The study of the Mean scores of the significant needs indicates that the mean score of medical students on Achievement is higher (11.50) than the mean score of law students (8.70). On the other hand, in respect of Autonomy the mean score of law students is higher (9.82) than the medical students (5.50).

Table VII. 12

Comparison of Law Students and Student-teachers on Needs

S. No.	Needs	Law Stu.		Stu. Tea.		F	t	P
		Mean	S.D.	Mean	S.D.			
1.	Achievement	8.70	3.12	8.38	3.72	1.42	0.47	NS
2.	Deference	6.94	3.14	6.86	3.10	1.02	0.13	NS
3.	Abasement	7.34	3.32	10.96	3.78	1.30	5.03	0.01
4.	Autonomy	9.82	2.82	5.14	2.58	1.19	8.51	0.01
5.	Aggression	6.06	2.72	5.58	2.38	1.31	0.92	NS
6.	Dominance	5.90	3.46	5.58	2.44	2.01**	0.52	NS
7.	Nurturance	6.34	2.68	8.54	3.36	1.57*	3.55	0.01
8.	Succorance	5.26	3.12	6.02	2.98	1.09	1.22	NS
9.	Affiliation	3.38	2.26	4.22	2.40	1.13	1.87	NS
10.	Counteraction	3.58	2.34	3.98	2.42	1.07	0.84	NS

It is evident from Table VII. 12 that law students and student-teachers differ very significantly in only three needs, namely, Abasement, Autonomy and Nurturance. There does not exist any significant difference between these two groups on needs of Achievement, Deference, Aggression, Dominance, Succorance Affiliation and Counteraction at the assumed level of confidence. A comparison of mean scores of the three significant needs reveals that law students have higher mean on Autonomy while the student-teachers exhibit higher mean on Abasement and Nurturance.

Table VII. 13

Comparison of Medical Students and Student-teachers on Needs

S. No.	Needs	Med. Stu.		Stu. Tea.		F	t	P
		Mean	S.D.	Mean	S.D.			
1.	Achievement	11.50	3.90	8.38	3.72	2.05**	4.05	0.01
2.	Deference	7.34	3.44	6.86	3.10	1.23	0.73	NS
3.	Abasement	7.50	2.68	10.96	3.78	1.99**	5.24	0.01
4.	Autonomy	5.50	2.98	5.14	2.58	1.34	0.64	NS
5.	Aggression	5.34	2.56	5.58	2.38	1.16	0.48	NS
6.	Dominance	5.58	2.66	5.58	2.44	1.19	0.00	NS
7.	Nurturance	6.70	2.86	8.54	3.36	1.38	2.92	0.01

S. No.	Needs	Med. Stu. Mean	Med. Stu. S.D.	Stu. Tea. Mean	Stu. Tea. S.D.	F	t	P
8.	Succorance	5.46	2.80	6.02	2.98	1.13	0.96	NS
9.	Affiliation	3.58	2.38	4.22	2.40	1.02	1.34	NS
10.	Counteraction	4.14	2.62	3.98	2.42	1.17	0.31	NS

The results of the comparison of medical students and student-teachers on the ten selected needs are found in Table VII. 13. The table shows that these two groups differ very significantly in three needs. It may be seen that medical students yielded a significantly higher need in Achievement, while student-teachers indicated significantly higher need in Abasement and Nurturance. In the rest seven needs no significant difference was found between the two groups under consideration.

Testing of Hypotheses

It was hypothesized that the various groups under investigation do not vary from one another in their (3) Power of Organization (4) Imagination (5) Linguistic abilities (8) Needs and (12) Interpersonal relationships. Analysis of data revealed the respective positions as under.

Power of Organization

The hypothesis is retained only in case of law students and student-teachers, while it is rejected in respect of all other groups.

Imagination

The hypothesis is retained in case of law students and student-teachers and also medical students and student-teachers. It is rejected in respect of other compared groups.

Linguistic Abilities

In case of Linguistic abilities the hypothesis is rejected in respect of Eng. Stu., and Stu. Tea., Law Stu. and Med. Stu., and Med. Stu. and Stu. Tea., while it is retained in case of other three compared groups.

Needs

The hypothesis stands rejected as all the compared groups indicated significant differences on two to five need variables.

Interpersonal Relationships

The hypothesis is rejected in case of Eng. Stu., and Stu. Tea., and Med. Stu., and Stu. Tea., while it is retained in respect of four other compared groups under consideration.

Discussion of Results

In Table VII. 14 appear all the TAT variables on which the compared groups have been found to be significantly different.

Table VII. 14

TAT Variables on which Compared Groups Differ Significantly

SL. No.	Groups Compared	Variables on which significant differences have been found.
1.	*Eng. Stu.** & Law Stu.	*Organization* (0.01), *Imagination* (0.01), *Achievement* (0.01), Abasement (0.01), Autonomy (0.01), Nurturance (0.05), *Counteraction* (0.01)
2.	*Eng. Stu.* & Med. Stu.	*Organization* (0.01), *Imagination* (0.01), *Outcome* (0.05), *Achievement* (0.01), Abasement (0.01), *Autonomy* (0.01), Nurturance (0.01).
3.	*Eng. Stu.* & Stu. Tea.	*Organization* (0.01), *Imagination* (0.01), Language (0.01), Interpersonal Relationships (0.05), *Achievement* (0.01), Abasement (0.01), *Autonomy* (0.01), Nurturance (0.01).
4.	*Law. Stu.* & Med. Stu.	*Organization* (0.01), *Imagination* (0.05), *Language* (0.05), Achievement (0.01), *Autonomy* (0.01).
5.	*Law. Stu.* & Stu. Tea.	Abasement (0.01), *Autonomy* (0.01), Nurturance. (0.01).
6.	*Med. Stu.* & Stu. Tea.	Organization (0.01), Language (0.01), Interpersonal Relationships (0.05), *Achievement* (0.01), Abasement (0.01), Nurturance (0.01).

* Signifies that the significant difference is in favour of groups printed in italics.

From the above table it can be inferred that, in general, the engineeing students are better placed than the other groups on a set of variables related to intellectual aspect (Organization, Imagination, Achievement), while medical and teacher-training students showed favourable position in respect of variables related to emotional and social aspects (Abasement, Nurturance, Interpersonal relationships).

Form Analysis

The Form analysis of data has revealed that the engineering students are significantly different from the law, medical and teacher-training students on Organization, while medical students are significantly different from the law and teacher-training students on the same variable. Highest mean score on Organization has been obtained by the engineering students while the lowest has been exhibited by the medical students. This shows that there is more system, coherence and logic in the stories of engineering students than in the other three groups. Organization is an important aspect of intellectual function and as the engineering students are intellectually superior than the other three groups, their having better power of Organization conforms to the expectation.

The form analysis also revealed that the engineering students yielded significantly higher scores than the other three groups on Imagination, while law students scored significantly higher than the medical students. This indicates that engineering students and law students are more imaginative than the medical students and the student-teachers.

Analysis of data on Language revealed the overall superiority of student-teachers on Language followed by the law students. This shows that the student-teachers and the law students have better linguistic ability than the engineering and the medical students. This finding also conforms to the expectations. According to Bingham[1] "It has been found that the specific abilities indicative of aptitude for legal training include not only the verbal facility and relatively large vocabulary which popular opinion ascribes to lawyers, but also peculiarly fertile imagination which quickly pictures the possible implications from a fragment of evidence or of testmony". Similarly a successful teacher requires good linguistic ability so that he can communicate the subject matter to his pupils effectively.

Interpersonal Relationships

Table VII. 5 revealed that student-teachers differ significantly from engineering students and medical students on Interpersonal relationships, while law students and student-teachers did not show significant difference between themselves. Distribution of frequency of stories over different types of interpersonal relationships (Table VII. 4) shows that there is preponderance of stories of cordial relationships in the group of student-teachers. This result supports the earlier finding in respect of social adjustment (Table V. 9) where student-teachers were found to have excelled in social adjustment.

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[1] Walter Van Dyke Bingham, *Aptitude and Aptitude Testing*, New York: Harper and Brothers Publishers, 1937, p. 180.

Outcome

Comparison of different groups under study on outcome indicated that engineering students differ significantly from medical students on outcome. Distribution of stories of different types of outcome (Table VII. 6) shows that engineering students have written more stories of happy outcome than the medical students. This suggests that engineering students are more cheerful and optimistic than the medical students.

Needs

The following table presents the needs, groups which have been differentiated on them and the mean scores of different groups on these needs from highest to lowest.

Table VII. 15*

Needs on which Compared Groups have been differentiated

S. No. Needs	Groups Differentiated	Mean Scores
1. Achievement	E.S. & L.S., E.S. & M.S., E.S. & S.T., L.S. & M.S., M.S. & S.T.	E.S. – 15.46 M.S. – 11.50 L.S. – 8.70 S.T. – 8.38
2. Abasement	E.S. & L.S., E.S. & M.S., E.S. & S.T., L.S. & S.T., M.S. & S.T.	S.T. – 10.96 M.S. – 7.50 L.S. – 7.34 E.S. – 5.58
3. Autonomy	E.S. & L.S., E.S. & M.S., E.S. & S.T., L.S. & M.S., L.S. & S.T.	L.S. – 9.82 E.S. – 8.52 M.S. – 5.50 S.T. – 5.14

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* E.S.–Engineering Students, L.S.—Law Students, M.S.—Medical Students, S.T.—Student-Teachers.

S. No.	Needs	Groups Differentiated	Mean Scores
4.	Nurturance.	E.S. & L.S., E.S. & M.S., E.S. & S.T., L.S. & S.T., M.S. & S.T.	S.T. – 8.54 M.S. – 6.70 L.S. – 6.34 E.S. – 5.14
5.	Counteraction	E.S. & L.S.	E.S. – 4.98 M.S. – 4.14 S.T. – 3.98 L.S. – 3.58

Table VII. 15 shows that majority of the groups under investigation have been differentiated on Achievement, Abasement, Autonomy and Nurturance, while only one group that is engineering students and law students has been differentiated on Counteraction.

Achievement

Looking at the Table VII. 15 it is found that on the need of Achievement engineering students differ significantly from all other groups, while medical students differ significantly only from the law and the teacher-training students. The overall superiority of engineering students on Achievement need in all these comparisons is evident. Medical students stand only next to the engineering students on this need. This indicates that the desire to accomplish something difficult, overcome obstacles and attain a high standard is more strong in engineering and medical students than in the law and teacher-training students.

The finding on the need of achievement in this study is confirmed by a number of other studies. Burgess (1953) found that the over achievers in the engineering curriculum scored significantly higher on achievement than the underachievers. Stern and Scanlon (1958) using Activities Index found that medical students obtained rather high score on the need to achieve. Miller[1] compared medical students with the normative group and reported that the former group possessed greater need to achieve. Grey (1963) compared the needs of teachers and mechanical engineers and found that the mechanical engineers scored significantly higher on achievement than the teachers.

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[1] George E. Miller, "Some Differences among Medical Schools and Medical Students", In the *Ecology of the Medical Student*, Chap. I.A., pp. 3-11, Edited by Helen H. Gee and Robert J. Glaser, Evanston, Illinois: Association of American Medical College, 1958.

Abasement

Analysis of data on the need of Abasement revealed that the student-teachers have been differentiated from all other groups on Abasement, while engineering students have also been differentiated from all other groups on this need. The highest mean score on this variable has been obtained by the student-teachers while the lowest by the engineering students. This reveals that the student-teachers submit passively to external force, accept blame, criticism, punishment, admit inferiority, misfortune and become resigned to fate more easily than the other groups under investigation. The reasons for the presence of these characteristics in the psychological make up of student-teachers are not to be sought far off. In the first place, majority of the persons join this professional training only as a last resort. Secondly, the image of the secondary school teacher is so gloomy that it leaves no incentive in those who are preparing for the profession of teaching. Hence the presence of high degree of abasement in this group is to a large extent a reflection of both the image of the profession and also that of the self.

In respect of this need of Abasement the findings of this study agrees with that of Gillis (1964), who compared the needs of teacher trainees and undergraduate students and found that the student-teachers showed stronger need for Abasement.

Autonomy

Comparison of different groups under study on the need of Autonomy as shown in Table VII. 15 revealed that the law students and the engineering students have been differentiated from all other groups on this need. The highest score on Autonomy has been exhibited by the law students and the next highest by the engineering students. This shows that the law and engineering students have a greater desire to be independent, free and to avoid activities prescribed by domineering authorities than the medical and the teacher-training students. Identical results were obtained by Stern and Scanlon(1958) who found that freshmen in medical college scored relatively low on Autonomy.

Nurturance

In respect of the need of Nurturance, the enginreeing students have been found to differ significantly from law, medical and teacher-training students, similarly student-teachers have also been found to differ significantly from all other groups under investigation. The over all superiority of student-teachers on Nurturance is evident from all the comparisons shown in Table VII. 15. This indicates that the student-teachers are kind hearted, and are generally ready to give sympathy and gratify the needs of helpless, weak and dejected much more than any other group.

The finding on the need of Nurturance is confirmed by the studies of Stern (1960), Gray (1963) and Gillis (1964), who found that the teachers or the teacher-trainees scored significantly higher on Nurturance as compared to other professional or normative groups.

Counteraction

From the perusal of Table VII. 15 again it is evident that engineering students have been differentiated from law students on Counteraction. Other groups under investigation do not differ significantly from each other on this need. This indicates that the engineering students have greater desire to overcome weakness, to master or make up a failure by restriving than the medical students.

Summary and Conclusions

In this chapter an attempt has been made to find out and compare the psycho-social dynamics of personality of the students preparing for the professions of engineering, law, medicine and teaching through the Thematic Apperception Test. Comparison of the groups under study has been made on three form characteristics namely, Organization, Imagination and language and three content variables viz., Interpersonal Relations, Outcome and Needs. Ten needs were selected for comparison.

The analysis of data revealed the points as summarised below:

1) Organization has been found to be the most discriminating index, in which all the compared groups except law students and student-teachers have been differentiated. The highest mean score on this variable has been exhibited by the engineering students while the lowest by the medical students.

2) Four compared groups have been found to differ significantly on Imagination, while law students and student-teachers and medical students and student-teachers did not reveal any significant difference. As in the case of Organization, here also, engineering students obtained the highest score and medical students got the lowest.

3) The trend has been found to be somewhat different in the case of Language, and it is in the expected direction. Student-teachers differ significantly from engineering and medical students, while law students differ significantly from medical students on language. There does not exist significant difference between other compared groups on this variable. The highest mean score has been obtained by the student-teachers while the next highest by the law students.

4) In Interpersonal Relationships student-teachers have been differentiated from engineering and law students. The other compared groups did not reveal significant difference between themselves. Distribution of frequency of stories of different Interpersonal Relations shows that there is a preponderance of stories of cordial interpersonal relationships in all the groups, but much more in student-teachers than the other groups.

(5) Except engineering students and medical students no other group has been differentiated on Outcome. The distribution of frequency of stories of different types of outcome shows that engineering students have given more stories of happy outcomes than the medical students.

(6) Majority of the groups under investigation have been differentiated on the needs of Achievement, Abasement, Autonomy, and Nurturance, while only one group has been differentiated on Counteraction. Comparison of mean scores of these needs revealed that the highest mean score on Achievement and Counteraction have been exhibited by the engineering students, highest on Abasement and Nurturance have been obtained by the student-teachers while the highest on Autonomy has been shown by the law students.

In a nutshell it can be said that on the variables indicative of Intelligence i.e., Organization, Imagination and Achievement engineering students in general have excelled other groups, while on the variables indicative of emotional and social characteristics that is, Interpersonal Relationships, Nurturance and Abasement student-teachers have gained better position.

Though there are great variation in the needs of different individuals in each group, a typical need pattern of each group under study has been found. Needs of Achievement and Autonomy are well marked in the personality pattern of engineering students, while needs of Autonomy and Abasement are high in law students. Medical students manifested greater needs for achievement, Abasement and Nurturance, while student-teachers exhibited stronger needs for Abasement and Nurturance and lower needs for Achievement and Autonomy.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

The study began with the specific purpose of comparing the personality characteristics of students preparing for the four different professions namely, engineering, law, medical and teaching and determining whether there are any significant differences in the selected personality dimensions between these four groups. The study also attempted to discover the distinguishing personality characteristics of students in these four professions.

The study tested the hypotheses that there is no difference between the four groups under consideration on the following Variables falling under the four broad areas of personality:

I. Intellectual

(1) Intellectual Level (2) Creative Potential (3) Power of Organization (4) Imagination and (5) Linguistic Abilities.

II. Motivational

(6) Values (7) Levels of Aspiration and (8) Needs

III. Emotional

(9) Adjustment (10) Control (11) Introversive-Extratensive Balance.

IV. Social

(12) Inter-personal Relationships.

The testing of hypotheses was accomplished by comparing the performance of the four groups on four tests namely Allport-Vernon-Lindzey Study of Values (Values), Saxena's Adjustment Inventory (Adjustment), Rorschach Ink Blot Test (Intellectual Level, Control, Creative potential, Introversive-Extratensive Balance, Level of Aspiration) and Thematic Apperception Test (Organization, Imagination, Language, Interpersonal Relationships and Needs). In order to investigate the above problems the author selected four samples, 50 students each from engineering, law, medical and teacher-training colleges. All these four colleges are located in the city of Allahabad. Only senior professional students who were on the verge of entering the professions were selected from each professional college. With a view to evaluate the experimental findings and emphasise the psychological differences between the groups, the four groups were equated fas ar as possible on geographical location, sex, residence, occupational Interest age, and economic status.

A carefully selected battery of tests was used to collect the data. The battery included Questionnaire, Personality Inventories and Projective Tests of personality. An Information Blank was employed to elicit background data. Two personality inventories namely Allport-Vernon-Lindzey Study of Values and Saxena's Adjustment Inventory were used to find out the values and adjustments of students in the four professions. Two widely used projective tests viz., the Rorschach Ink Blot Test and the Thematic Apperception Test were employed to discover the personality structure and psycho-social dynamics of personality of the four groups under consideration. The Personality inventories were administered in small groups while the projective tests were administered individually. All the tests were adminisetred by the investigator himself.

After the completion of the tests, each subjects' responses were scored and the data so collected were tabulated. The Mean and the Standard Deviation for each category of test were determined in respect of all the four groups under study. The differences in mean scores for all the categories were determined and their significance examined by the t-test. Variances were compared for homogeneity before obtaining the value of t. Chi-square as a test of significance was also used for some categories in the Adjustment Inventory, Rorschach Test and Thematic Apperception Test. The confidence levels established were 0.05 for significant and 0.01 for highly significant differences. For finding out intra-value differences for the four groups the t-test was applied to the strength of six value variables within each group according to the formula of correlated means. To have an estimate of the relationships between five Rorschach components within each group coefficient of correlation was computed.

Findings

I. INTELLECTUAL

(1) Intellectual Level

Intellectual level as evaluated through the Rorschach Ink Blot Test revealed that the engineering students have been differentiated significantly from law, medical and teacher-training students, while these groups did not differ significantly from each other on this variable. Distribution of cases on, above and below median indicated the superiority of engineering students over all other groups in Intellectual Level. It also showed that the law, medical and teacher-training students are not very much different from one another on this variable.

(2) Creative Potential

Rorschach Test measured the Creative Potential of different groups under investigation and showed that the medical students have been differentiated from engineering, law and teacher-training students on this variable, while the last three groups have not shown significant differences between themselves. The distribution of cases on, above and below median indicated that the engineering, law and teacher-training students are more or less alike on Creative Potential while medical students do not have as much creative potential as the other three groups have.

(3) **Power of Organization**

When different groups under consideration were compared on the power of organization measured by TAT, except law students and student-teachers all the groups were found to differ significantly on this variable. Comparison of mean scores indicated overall superiority of engineering students on power of organization. Law students and student teachers were found to be alike, while medical students exhibited the lowest score on organization.

(4) **Imagination**

As regards Imagination the trend is similar as found in the case of Organization. Engineering students again yielded significantly higher scores than the law, medical and teacher-training students, while law students scored significantly higher than the medical students. This again showed the superiority of engineering students over all other groups on Imagination. The law students obtained the next highest score while the medical students got the lowest score.

(5) **Language**

On language student-teachers exhibited significantly higher score than the engineering and the medical students while the law students showed significantly higher score than the medical students. This showed the over all superiority of student-teachers on language followed by law students. This indicated that the student-teachers and the law students have better linguistic ability than the engineering and the medical students.

II. **MOTIVATIONAL**

(6) **Values**

The Allport-Vernon-Lindzey Study of Values tested the values and yielded significant differences when engineering and law students were compared. Engineering students were found to have significantly higher score on the economic value while law students produced significantly higher score on the political value. In a comparison of engineering and medical students, engineering students yielded higher scores on the economic and the aesthetic scales while medical students scored significantly higher on theoretical and social scales. When comparing engineering students and student-teachers, engineering students were found to have significantly higher score on the economic value while student-teachers showed significantly higher score on the political value.

In comparing law and medical students, law students exhibited significantly higher values on the aesthetic and political scales while medical students revealed significantly higher values on the theoretical and scoial scales. No significant value differences were found between law students and student-teachers. In a comparison of medical students and student-teachers medical students revealed significantly higher value in social scale while student-teachers indicated significantly higher values in the aesthetic and political scales.

The results derived from the Study of Values showed that the students preparing for these four professions revealed some distinguishing pattern of values. In the case of engineering students economic value emerged as the highest single value variable while religious was the lowest. In the case of law students political value emerged as the highest value varable followed by economic. In respect of medical students theoretical value was first followed by social value while aesthetic value emerged as the lowest value variable. In the case of student-teachers political vaue emerged as the highest value variable followed by theoretical.

(7) **Level of Aspiration**

No Significant difference was found between engineering, law, medical and teacher-training students on Level of Aspiration. Hence it can be said that these four groups of professional students are similar in respect of their level of aspiration.

(8) **Needs**

Majority of the groups under study have been differentiated on the needs of Achievement, Abasement, Autonomy and Nurturance while only one group namely engineering and law students has been differentiated on Counteraction. In the rest of the five needs viz., Deference, Aggression, Dominance, Succorance and Affiliation no significant difference between the groups was found. Comparison of mean scores of the first five needs revealed that the highest mean score on Achievement and Counteraction have been exhibited by the engineering students, highest on Abasement and Nurturance have been obtained by the student-teachers and highest on Autonomy has been shown by the law students.

III. EMOTIONAL

(9) **Adjustments**

Saxena's Adjustment Inventory was used to compare the different groups under study on General Adjustment as well as on Home, Health, Social, Emotional and College Adjustments. On the General adjustment scale student-teachers have been differentiated from the engineering and law students, while medical students have been differentiated from the engineering students. Comparison of mean scores revealed that the student-teachers exhibited the highest score, medical students the next highest and the engineering students the lowest. This indicates the superiority of student-teachers over all other groups on General Adjustment.

On Home adjustment no significant difference has been found between the different groups under investigation. However, comparison of different groups over grades of home adjustment showed that engineering students were better placed than the law students over this distribution. The analysis of Health adjustment points out that only one group viz., engineering students and student-teachers were differentiated on this scale, the mean score of student-teachers being higher than the engineering students.

Social scale was found to be the most discriminating adjustment area in which three compared groups have been differentiated, medical students scored significantly higher than the engineering students, student-teachers yielded significantly higher score than the engineering students and the student-teachers exhibited a significantly higher score than the law students. The overall superiority of student-teachers in all these comparisons has been clearly revealed. No difference between the groups under consideration exists in respect of Emotional and College Adjustment.

(10) **Control**

The comparison of different groups under investigation on control reveals that there is no significant difference between engineering, law, medical and teacher-training students on this variable. This indicates that these four groups are almost similar in respect of control.

(11) **Introversive-Extratensive Balance**

Analysis of data on Introversive-Extratensive balance reveals that only law students and medical students have been differentiated on this scale while other groups do not differ significantly. The distribution of cases on below and above median indicates that the law students are more introversive than the medical students. The negative signs of the common medians show that all the four groups, that is engineering, law, medical and teacher-training students have a tendency toward introversiveness.

IV. SOCIAL

(12) **Inter-Personal Relationships**

Interpersonal relationships as revealed through the TAT indicated that the student-teachers were differentiated from the engineering and medical students on this variable.

The frequency of distribution of stories on different types of interpersonal relationships showed that the student-teachers have better interpersonal relations than the engineering and medical students. The overall superiority of student-teachers on interpersonal relationships is evident in all these comparisons.

Conclusions

(1) Findings in general lead to the conclusion that significant differences do exist between engineering, law, medical and teacher-training students on majority of the personality variables under investigation.

(2) The largest differences were found on the variables indicative of Intelligence, namely Intellectual level, Creative potential, Organisation, Imagination, while some differences were noted on the variables indicative of motivational, emotional and social characteristics.

(3) Engineering students in general have been found to have excelled other groups on the variables indicative of Intelligence while student-teachers have gained better position on the variables indicative of emotional and social characteristics.

(4) Students in all these four professions have been found to have a tendency toward introversiveness.

(5) Analysis of test scores revealed that individuals with greatly varying personality characteristics enter these four types of professional training. However, engineering students are not as diverse in their personality characteristics as the other three groups are. Law, medical and teacher-training programmes seem to draw students from the wider range of personality make-up.

(6) Though there is wide range of pesronality in each group, the engineering, law, medical and teacher-training students show distinguishing pattern of values, different characteristics of personality structure, and typical need patterns. These patterns and characteristics have been described in detail in the previous chapters.

(7) In a majority of the personality variables under investigation law students and student-teachers have been found to be alike.

(8) On the whole, the engineering students have been found to be a distinctly separate group. Medical students have a different, though not a very clear cut pattern. There are more similarities than differences between law and teacher-training students.

(9) The results derived from the different tests employed in this investigation indicate that the students preparing for the four different professions exhibit some distinguishing characteristics. These characterizations are as follows:

(a) Engineering Students

They are adults of superior intelligence and they have adequate capacity for creative thinking, organization and imagination. They do not possess as much linguistic ability as the student-teachers or the law students. Economic values are given high importance indicating that they are oriented to that which is useful and pragmatic. They are practical minded persons. Their level of aspiration is high but not reaching beyond the productive resources. They show high needs for achievement and autonomy and low needs for abasement and nurturance. They have a well balanced impulse control. The tendency toward introversiveness is more pronounced. Their interpersonal relationships are satisfactory. In terms of general adjustment this group is by far the best adjusted.

(b) **Law Students**

They are intelligent adults. They have adequate creative potential, power of organisation and imagination, but they do not seem to make the best use of their creative and productive abilities. Their linguistic ability is well above the average. They place high esteem on the political value indicating that they gain satisfaction in power, prestige and in having some control over others. They are also interested in that which is useful. They manifest higher need for Autonomy but lower need for Achievement. They are guided more by the basic drives rather than by long range goals. They show uncommon preoccupation with abstract concepts. They have an ambivalent balance with a tendency toward introversiveness. They show satisfactory interpersonal relationships and normal general adjustment.

(c) **Medical Students**

They are also intelligent adults. They do not have as much creative potential, power of organization and imagination as the other three groups have. They do not make the best use of their creative and productive abilities. In linguistic ability they fall short of the student-teachers and the law students. They attach highest importance to the theoretical value indicating that they gain satisfaction from ordering and systematising knowledge. They also show interest in love of people. However, social 'distanciation' and superficial conformity suggest that their emotional reactivity is neither extensive nor do they react to emotional situations with emotional involvement and affectional considerateness for others. They show high need for Achievement and Abasement. They seem to possess an ambiequal balance with a tendency toward introversivenoss. Their interpersonal telationships are normal and general adjustment is satisfactory.

(d) **Student-Teachers**

Student-teachers are intelligent adults. Potentially they are comparable with law students and medical students. They have average creative potential, power of organization and imagination. They have adequate linguistic ability. They consider the political value as of great importance indicating that they are interested in power, prestige, and having some control over others. They are also oriented to "cognitive approach" to things. Their level of aspiration is not consistent with their abilities and the drive towards achievement does not have requisite energy and potentiality. They manifest stronger needs for Abasement and Nurturance and lower needs for Achievement and Autonomy. They exhibit good social adjustment. They show an ambivalent balance with a tendency toward introversiveness. In terms of general adjustment this group falls within the normal range.

Implications

The present study may be characterised as exploratory and the results obtained may be considered tentative pending further investigation and verification. Nevertheless, a limited number of implications can be drawn from the analysis and comparisons. The implications for Vocational Guidance, Vocational Selection and Vocational Development are given below:

Vocational Guidance

(1) The heterogeneity found within each group suggests that the vagaries of experience or chance factors are involved in the decisions to enter the professions, though probably to a lesser degree than in the case of many other vocations.

(2) Vocational guidance should minimise or eliminate trial and floundering, helping everyone to embark upon an appropriate life work on the completion of formal education.

(3) Assuming that the image of self and of a profession are involved in any particular choice, the proper "balance" between the two images leading to a decision on one of several professions need to be effected at an appropriate stage.

(4) A young man before deciding to prepare for a profession toward which he is inclined, should know about it well enough to be certain that his abilities and personality characteristics are such as would enable him to be successful not only in the professional training but also in the profession itself. The counsellor engaged in providing vocational guidance should himself be well informed of these requirements.

(5) The personality sketches of engineering, law, medical and teacher-training students which emerged from the present investigation are not sufficiently clear-cut to provide a scientific basis for occupational choice.

(6) However, they clarify to some extent the image of the four groups of professional students under consideration. The characteristics of each group have been described earlier.

Vocational Selection

(1) The present investigation suggests that in the selection of professional students, apart from academic competence, due weightage need to be given to personality factors which have their roots in Intellectual, Motivational, Emotional and Social powers of the individual.

(2) A good selection procedure should not only pick up those who have greatest chance of success in the professional training but also identify those who are capable of being successful engineers, lawyers, physicians and surgeons and teachers.

(3) Selection would be more fruitful if intelligence, scholastic aptitude and personality characteristics could somehow be taken into simultaneous consideration.

(4) A good test of intelligence could be used to assess the intellectual level of the applicants. In respect of scholastic aptitude tests and related areas the results of such comprehensive studies as that conducted by Dr. Mitra[1] could be profitably utilised in the selection of professional students, in this case medical students. In this study General Ability Speed, Biology and English Usage were found to be the three best predictors of aptitude for the study of medicine. Regarding the measurement of personality characteristics, a comprehensive test, or a battery of tests which would measure the qualities needed for success in the training programme as well as in the profession itself need to be developed.

(5) Further investigation in this direction need to be undertaken.

(6) Though claims have been made of the effective use of the Rorschach and the Thematic Apperception tests in vocational selection and guidance, the present investigator would hesitate to recommend them for the same purpose, even as a group test, in view of the shortage of trained and experienced workers in this field as well as the time involved in administering and scoring the protocols. However, these tests could be used in marginal doubtful or exceptional cases in vocational guidance.

Vocational Development

(1) Vocational Development is a new concept and has come into use only in recent years. It is conceived of as one important aspect of individual development focussing on work.

(2) The concept of vocational development leads logically to that of vocational maturity. The professional students during their training period may be considered to function in the "Exploratory" vocational life stage which will lead them on to the "Establishment" stage.

(3) The diversity of persons entering and completing their training in any one of the four types of professional colleges under study suggests that greater attention be given to effect a desired change in the trainees through the college programmes and environment.

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[1] Shib K. Mitra, "Validity of Medical Student Selection Tests", *Journal of Vocational and Educational Guidance,* 1961, Vol. 7, No. 3, 113—124.

(4) Vocational development should be considered as one of the central tasks of education. According to McGlothlin[1] "an important objective of professional education is to shape the personalities of its students into a professional mold." The professional colleges should provide the kinds of experience through which social sensitivity, work habits, and professional attitudes are formed and developed in the trainees.

(5) Extremely important are the direction and motivation given to vocational development through the pursuit of a purpose which is individually satisfying as well as socially useful.

Suggestions for Further Research

(1) In the present investigation the conclusions are based on the measurement of twelve personality variables obtained from 200 professional students, 50 from each group namely engineering, law, medical and teaching, who, it must be admitted, may not perfectly represent the total population from which they were drawn. There is, therefore, a need of cross, validation of the reported results with larger samples from similar population elsewhere.

(2) The present investigation was limited to students in four distinct professions mentioned earlier. Greater diversity would be introduced if other professions than those covered by this study are also investigated.

(3) Researches may be planned by developing a fairly exhaustive list of traits relevant to success in professional education and different groups may be compared on them.

(4) It would be worthwhile to administer both the Rorschach and the TAT as a group test to similar groups and see how far the results differ from those obtained by individual administration.

(5) In the present study the sample consisted of normal adults preparing for these four professions. It will be an important contribution towards research if other special groups from similar samples are studied and compared, for example high achievers and low achievers, most successful and least successful or most efficient and least efficient students.

(6) One of the important areas in which a thorough probing is required is to study the personality traits which are the best predictors of success in a professional college as well as in the profession itself.

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[1] William J. McGlothlin, *Patterns of Professional Education*, New York: G.P. Putnam's Sons, 1960, pp. 2-4.

(7) Personality patterns of successful men actively engaged in different professions need to be explored. It could be seen how this pattern differs from the personality patterns of students in the same professions.

(8) Research should also be planned to discover whether personality differences in the four groups of professional students reflected inherent personality factors or special training.

(9) It could also be seen as to how these personality traits change in the same group of students as they advance in their training. Careful and intensive follow-up studies in the same area will also be enlightening.

(10) Further researches can be planned and conducted to discover the relationships between personality and vocational preference, entry and success or satisfaction in the professions.

APPENDIX A

Engineering Students: Value Scores

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
1	46	39	33	35	50	37
2	46	46	31	43	33	41
3	43	45	31	40	48	33
4	39	53	47	39	33	29
5	42	43	39	37	35	44
6	35	39	49	34	42	41
7	40	54	31	43	37	35
8	38	45	44	44	36	33
9	33	56	38	39	42	32
10	44	37	43	44	39	33
11	40	45	41	38	38	38
12	51	37	32	38	46	36
13	35	50	32	45	45	33
14	38	36	46	37	39	44
15	37	43	42	38	41	39
16	36	33	50	45	44	32
17	35	45	40	39	45	36
18	38	47	40	43	34	38
19	50	42	41	44	32	31
20	33	48	42	46	39	32
21	45	40	40	33	42	40
22	40	50	38	29	37	46
23	35	59	43	28	47	28
24	45	37	36	45	43	34
25	44	40	43	33	40	40
26	40	48	30	46	33	43
27	40	52	41	31	40	36
28	45	53	29	34	46	33
29	41	45	38	39	37	40
30	33	57	36	44	37	33
31	37	53	40	34	41	35
32	43	44	40	33	44	36
33	39	50	50	39	44	18
34	37	50	43	46	31	33
35	42	57	31	36	39	35

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
36	47	48	33	32	39	41
37	34	53	50	30	45	28
38	41	41	38	42	39	39
39	46	48	42	44	30	30
40	46	34	36	48	44	32
41	36	41	33	53	44	33
42	33	49	25	45	43	45
43	43	41	28	45	44	39
44	40	53	33	33	46	35
45	50	40	40	37	36	37
46	41	39	31	48	38	43
47	35	46	46	35	44	34
48	45	40	41	39	43	32
49	29	51	47	31	33	49
50	32	43	28	43	34	60

Law Students: Value Scores

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
1	42	29	29	48	43	49
2	34	45	46	38	44	33
3	38	41	43	35	45	38
4	29	48	46	30	49	38
5	44	37	41	31	48	39
6	43	46	28	27	59	37
7	48	47	30	38	51	26
8	49	36	36	51	29	39
9	50	39	34	53	43	21
10	41	44	35	42	45	33
11	48	44	35	37	56	20
12	43	29	48	38	49	33
13	35	38	39	37	44	47
14	30	39	40	43	42	46
15	41	45	50	36	37	31
16	44	33	27	38	48	50
17	44	43	33	37	50	33
18	40	41	27	47	49	36
19	38	35	31	43	46	47
20	37	41	35	44	49	34
21	39	45	39	42	42	33
22	45	32	33	49	35	46
23	31	41	31	50	41	46

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
24	50	37	33	28	44	48
25	38	45	41	27	37	52
26	38	37	44	51	41	29
27	39	44	37	36	48	36
28	47	44	25	39	47	38
29	46	56	21	42	50	25
30	32	48	23	47	36	54
31	30	37	45	48	41	39
32	35	28	54	38	49	36
33	37	44	46	29	41	43
34	41	45	36	30	55	33
35	41	49	37	37	54	22
36	45	47	36	35	38	39
37	38	38	35	52	37	40
38	49	40	34	32	50	35
39	40	49	41	36	38	36
40	30	34	36	53	41	46
41	45	48	36	34	40	37
42	33	42	44	35	48	38
43	30	44	49	44	39	34
44	42	50	30	44	37	37
45	35	46	51	32	41	35
46	35	30	44	27	61	43
47	40	45	43	35	38	39
48	41	38	32	35	54	40
49	44	47	35	36	39	39
50	40	45	42	36	39	38

Medical Students: Value Scores

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
1	40	37	33	52	42	36
2	48	43	34	31	43	41
3	49	51	35	34	39	32
4	48	39	32	52	37	32
5	44	39	32	42	34	49
6	48	45	26	50	41	30
7	45	32	34	45	49	35
8	47	42	25	41	35	50
9	36	41	46	44	39	34
10	46	31	30	48	40	45
11	49	44	30	42	35	40

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
12	50	35	38	42	47	28
13	46	50	30	41	37	36
14	42	50	30	37	41	40
15	37	35	33	49	48	38
16	47	44	41	33	40	35
17	42	39	30	49	45	35
18	49	46	34	42	35	34
19	51	42	29	48	43	27
20	39	41	42	35	44	39
21	46	41	36	47	36	34
22	41	47	57	27	32	36
23	42	41	32	43	40	42
24	41	39	32	41	40	47
25	37	39	48	33	43	40
26	52	41	28	49	44	26
27	50	45	33	43	34	35
28	41	38	30	50	45	36
29	48	43	43	31	39	36
30	42	46	54	30	36	32
31	45	42	34	46	37	36
32	38	40	45	43	40	34
33	44	33	34	46	48	35
34	47	46	27	49	40	31
35	45	40	33	43	36	43
36	35	33	37	48	47	40
37	46	44	32	34	44	40
38	42	48	30	35	42	43
39	37	40	36	58	30	39
40	45	52	29	41	36	37
41	46	43	32	43	39	37
42	51	34	39	41	48	27
43	40	39	32	50	42	37
44	45	29	33	46	39	48
45	45	25	32	53	45	40
46	46	41	25	40	35	53
47	35	36	37	44	42	46
48	49	38	33	51	38	31
49	43	43	36	40	37	41
50	48	44	35	54	34	25

Student-Teachers: Value Scores

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
1	37	40	43	43	44	33
2	47	45	32	35	43	38
3	46	38	45	33	38	40
4	39	44	32	38	47	40
5	45	39	33	42	34	47
6	38	26	57	46	37	36
7	40	47	32	42	35	44
8	46	38	34	46	36	40
9	57	42	34	35	36	36
10	43	50	40	32	44	31
11	49	47	29	34	52	29
12	50	47	33	29	39	42
13	43	44	38	37	47	31
14	45	44	36	46	39	30
15	55	38	29	43	40	35
16	58	34	43	27	50	28
17	29	34	43	41	36	57
18	43	37	29	44	43	44
19	54	38	28	42	46	32
20	32	48	39	43	41	37
21	38	44	40	31	51	36
22	43	32	46	37	40	42
23	49	49	22	41	50	29
24	38	40	43	31	50	38
25	43	35	48	34	49	31
26	30	49	40	36	39	46
27	43	32	44	33	42	46
28	46	41	32	36	48	37
29	42	42	37	37	46	36
30	41	37	43	37	41	41
31	38	36	38	50	38	40
32	33	41	49	45	40	32
33	38	31	38	45	45	43
34	38	47	34	37	39	45
35	50	43	31	33	37	46
36	36	37	40	34	46	47
37	40	35	50	45	39	31
38	36	43	38	40	49	34
39	43	52	36	44	31	34

Case No.	Theo.	Eco.	Aes.	Soc.	Pol.	Rel.
40	41	51	43	39	42	24
41	28	24	51	48	44	45
42	43	25	47	43	39	43
43	46	36	40	40	43	35
44	42	39	44	41	40	34
45	56	42	36	35	39	32
46	35	37	33	33	56	46
47	43	48	42	34	47	26
48	42	29	43	39	51	36
49	42	46	35	40	45	32
50	40	37	48	38	41	36

Engineering Students: Adjustment Scores

Case No.	Home	Health	Social	Emotional	College	Total
1	30	36	58	48	52	224
2	58	63	52	64	56	293
3	54	36	56	64	52	262
4	44	48	47	46	48	233
5	62	63	71	69	68	333
6	47	25	36	30	44	182
7	58	48	67	58	56	287
8	62	44	38	48	36	228
9	44	36	54	50	56	240
10	40	52	52	42	44	230
11	62	63	63	58	52	298
12	58	56	40	51	52	257
13	58	52	54	51	64	279
14	37	63	45	50	48	243
15	65	56	52	56	60	289
16	58	59	54	59	52	282
17	58	36	38	32	48	212
18	58	44	69	53	52	276
19	54	44	47	46	52	243
20	62	63	67	59	56	307
21	58	48	60	58	48	272
22	51	40	47	38	44	220
23	47	56	49	61	56	269
24	62	59	47	51	60	279
25	58	44	56	63	56	277
26	54	44	60	55	68	281
27	47	36	45	53	48	229

Case No.	Home	Health	Social	Emotional	College	Total
28	58	52	52	55	52	269
29	54	59	54	58	60	285
30	62	63	58	64	48	295
31	47	44	65	50	52	258
32	47	56	47	51	60	261
33	47	56	40	51	48	242
34	23	29	45	42	44	183
35	51	51	54	48	64	268
36	58	56	49	56	44	263
37	65	59	49	56	44	273
38	51	59	43	55	56	264
39	54	44	52	55	52	257
40	47	36	52	29	44	208
41	62	63	52	55	52	284
42	65	63	56	51	60	295
43	58	56	60	56	56	286
44	54	56	65	63	56	294
45	30	36	47	46	40	199
46	62	63	43	63	36	267
47	62	56	69	67	64	318
48	62	52	34	48	44	240
49	47	59	58	53	44	261
50	40	59	54	61	44	258

Law Students: Adjustment Scores

Case No.	Home	Health	Social	Emotional	College	Total
1	62	25	45	55	40	227
2	51	52	52	48	36	239
3	51	44	56	50	40	241
4	33	40	27	27	40	167
5	58	63	58	59	64	302
6	54	56	58	58	56	282
7	54	63	69	63	52	301
8	54	63	54	63	56	290
9	51	48	65	53	52	269
10	54	59	60	64	52	289
11	54	63	71	64	60	312
12	51	59	52	50	40	252
13	44	59	29	46	28	206
14	62	63	69	59	52	305
15	62	56	49	64	40	271

Case No.	Home	Health	Social	Emotional	College	Total
16	54	52	63	61	68	298
17	51	56	54	50	60	271
18	47	48	45	46	48	234
19	58	52	54	55	48	267
20	54	48	52	48	56	258
21	54	52	58	55	52	271
22	37	33	38	34	44	186
23	37	29	36	43	36	181
24	30	56	54	50	48	238
25	62	59	49	56	64	290
26	58	56	58	63	52	287
27	40	63	49	56	44	252
28	47	63	58	53	56	277
29	62	63	69	51	60	305
30	65	36	47	48	48	244
31	65	59	56	48	52	280
32	58	59	36	55	32	240
33	54	52	47	61	48	262
34	54	59	52	67	44	276
35	37	44	56	58	40	235
36	62	63	58	67	60	310
37	44	56	45	51	56	252
38	58	52	60	45	64	279
39	58	59	60	58	52	287
40	54	52	60	56	52	274
41	47	59	58	53	68	285
42	54	56	63	61	60	294
43	47	52	52	53	48	252
44	54	48	49	43	36	230
45	58	59	67	51	48	283
46	54	52	38	38	36	218
47	54	56	63	56	60	289
48	65	36	45	35	44	225
49	51	63	65	55	68	302
50	62	56	63	61	56	298

Medical Students: Adjustment Scores

Case No.	Home	Health	Social	Emotional	College	Total
1	37	44	52	53	52	238
2	51	52	56	56	52	267
3	47	59	65	59	60	290
4	47	44	56	46	56	249
5	40	52	52	56	44	244
6	40	56	54	61	52	263
7	62	59	60	67	56	304
8	54	56	58	53	52	273
9	58	52	43	51	52	256
10	62	56	49	56	60	283
11	58	56	60	64	48	286
12	58	48	45	53	52	256
13	44	52	56	59	48	259
14	51	48	54	55	52	260
15	54	59	67	66	60	306
16	54	56	52	56	48	266
17	58	59	63	64	52	296
18	47	52	54	43	48	286
19	58	59	60	61	48	286
20	62	59	58	63	56	298
21	65	56	47	59	60	287
22	44	25	29	24	32	154
23	58	56	54	55	44	267
24	51	59	67	61	60	298
25	58	59	60	58	52	287
26	65	56	60	48	44	273
27	58	48	58	53	48	265
28	65	56	63	53	64	301
29	51	44	52	42	56	245
30	62	56	63	51	60	292
31	60	52	58	50	48	268
32	47	33	38	38	40	196
33	54	52	58	63	52	279
34	58	56	60	64	52	290
35	47	48	54	55	48	252
36	65	48	58	55	48	274
37	44	44	56	53	56	253
38	58	63	60	64	64	309
39	51	63	69	63	64	310
40	65	36	52	38	44	235
41	62	63	71	69	68	333

Case No.	Home	Health	Social	Emotional	College	Total
42	62	56	52	53	36	259
43	65	59	47	59	40	270
44	65	63	60	66	52	306
45	54	59	54	53	52	272
46	65	63	60	64	52	304
47	51	56	56	40	48	251
48	62	63	65	67	56	313
49	58	59	49	59	44	269
50	58	63	69	69	64	323

Student-Teachers: Adjustment Scores

Case No.	Home	Health	Social	Emotional	College	Total
1	54	33	56	42	52	237
2	47	56	38	50	40	231
3	51	59	49	58	44	261
4	51	59	49	59	64	282
5	54	59	45	42	48	248
6	65	63	63	64	52	307
7	54	59	60	55	48	276
8	51	48	60	53	56	268
9	65	56	56	61	60	298
10	62	56	60	64	68	310
11	58	52	65	61	60	296
12	62	59	63	66	52	302
13	65	56	65	64	68	318
14	58	63	67	64	60	312
15	65	59	56	61	48	289
16	44	59	54	64	48	269
17	65	40	60	58	44	267
18	62	48	60	53	56	279
19	54	48	52	51	44	249
20	44	40	45	55	36	220
21	37	59	54	56	56	262
22	47	52	52	48	40	239
23	58	59	69	67	60	313
24	54	56	58	51	52	271
25	62	59	60	55	52	288
26	37	40	43	35	32	187
27	58	59	65	56	64	302
28	62	52	52	55	56	277
29	37	36	47	45	64	229

Case No.	Home	Health	Social	Emotional	College	Total
30	62	56	67	66	60	311
31	62	56	60	53	56	287
32	65	63	71	67	68	334
33	62	52	52	64	56	286
34	69	56	63	58	60	306
35	58	52	52	43	44	249
36	65	59	63	63	60	310
37	65	59	63	61	60	308
38	51	59	65	53	60	288
39	54	59	58	59	60	290
40	65	44	69	56	52	286
41	54	59	56	40	52	261
42	51	59	45	43	36	234
43	65	63	69	66	64	327
44	44	56	65	51	36	272
45	51	63	58	66	44	282
46	51	59	65	63	56	294
47	54	48	54	53	40	249
48	58	63	63	58	60	302
49	37	59	52	35	48	231
50	65	59	71	58	60	313

Engineering Students: Scores of Rorschach Rating Scale

Case No.	Int. Level	Con-trol	Crea. Pot	Int. Ext Bal.	Lev. of Asp.
1	21	6	13	–1	3
2	19	8	14	2	1
3	17	9	5	2	1
4	18	9	2	2	1
5	20	10	12	–3	3
6	17	11	12	4	3
7	26	16	18	–3	5
8	21	15	16	3	3
9	19	8	9	–1	1
10	27	13	23	–5	3
11	21	16	11	–1	3
12	18	8	10	–3	4
13	25	13	12	2	3
14	19	17	12	–3	4
15	22	17	10	2	3
16	23	15	20	1	3

Case No.	Int. level.	Con-trol.	Great. Pot.	Int. Ext. Bal.	Lev. of Asp.
17	18	5	8	–5	3
18	18	8	9	–6	4
19	22	12	15	–4	3
20	25	14	17	–4	3
21	23	12	17	–3	3
22	19	10	16	1	4
23	22	8	11	–4	3
24	22	13	15	–1	3
25	21	7	12	–1	3
26	18	9	10	–2	3
27	21	13	7	0	3
28	22	12	16	–2	3
29	20	11	11	2	3
30	21	12	12	0	3
31	26	13	21	1	3
32	19	12	9	1	3
33	23	14	20	1	3
34	19	10	10	5	1
35	20	10	12	–5	5
36	19	9	8	0	3
37	26	13	16	–5	5
38	19	10	10	2	1
39	21	6	8	–4	3
40	21	11	22	0	3
41	23	11	12	–6	3
42	17	9	9	–1	4
43	23	13	19	–1	3
44	16	10	5	0	1
45	16	9	11	–2	3
46	20	12	17	2	4
47	16	8	6	1	1
48	20	11	12	–1	3
49	23	13	24	–2	3
50	16	10	8	0	3

Law-Students: Scores of Rorschach Rating Scale

Case No.	Int. Level	Con-trol	Great Pot.	Int. Ext. Bal.	Lev. of Asp.
1	16	13	14	–3	3
2	20	10	11	–4	5
3	20	15	14	2	3
4	18	11	15	–3	3
5	17	10	10	2	1
6	24	14	18	–4	3
7	16	13	11	0	3
8	15	8	8	5	1
9	22	12	17	–4	4
10	19	14	12	3	3
11	19	13	12	4	3
12	21	14	15	–1	3
13	16	7	6	–2	1
14	20	16	13	1	5
15	18	14	10	1	3
16	16	11	6	–2	3
17	17	11	12	2	1
18	18	14	10	1	3
19	18	8	7	–5	3
20	21	11	12	–1	3
21	17	4	6	–2	3
22	14	5	6	–2	3
23	23	12	19	–4	4
24	18	9	12	–4	3
25	18	7	8	–4	3
26	26	15	16	–5	4
27	22	12	14	–5	3
28	22	12	13	–4	3
29	22	8	12	–7	3
30	17	10	10	–4	3
31	20	7	14	–5	4
32	17	13	11	–1	3
33	14	8	10	1	1
34	16	11	9	–5	3
35	17	11	10	–4	3
36	13	10	7	2	1
37	16	10	7	–1	1
38	17	12	12	–2	3
39	16	10	7	2	1

Case No.	Int. level	Control	Creat. Pot.	Int. Ext. Bal	Lev. of Asp.
40	22	12	14	0	3
41	13	2	2	–1	1
42	16	8	3	0	1
43	21	9	9	–2	3
44	23	10	16	–2	3
45	18	9	7	–2	3
46	18	10	11	–2	3
47	21	11	12	–1	3
48	21	12	11	–3	3
49	18	7	4	–2	1
50	20	11	10	1	3

Medical Students: Scores of Rorschach Rating Scale

Case No.	Int. level	Control	Creat. Pot.	Int. Ext. Bal.	Lev. of Asp.
1	23	12	12	–5	5
2	15	4	6	–3	4
3	22	11	13	–2	3
4	15	9	5	0	3
5	20	12	13	0	5
6	19	13	7	2	3
7	15	7	5	–3	3
8	15	7	9	2	1
9	16	3	5	2	1
10	15	12	6	2	1
11	18	11	7	–3	1
12	18	10	7	2	3
13	20	11	12	–4	3
14	22	11	20	1	3
15	18	13	10	3	1
16	18	9	10	0	3
17	20	5	9	4	3
18	28	17	22	–4	4
19	22	10	17	–3	3
20	18	10	11	–3	3
21	17	3	4	0	1
22	17	14	10	–4	3
23	19	9	10	–2	3
24	22	12	14	3	3

Case No.	Int. Level	Con-trol.	Creat. Pot.	Int. Ext. Bal.	Lev. of Asp.
25	17	9	10	0	3
26	16	12	10	–1	1
27	25	16	14	–4	3
28	11	1	0	0	1
29	20	9	10	0	3
30	14	6	4	3	1
31	15	12	4	3	1
32	15	5	4	3	1
33	21	12	13	–2	3
34	18	8	9	1	1
35	17	9	9	–3	3
36	15	8	7	–2	1
37	19	9	8	–2	3
38	21	11	10	–5	3
39	18	15	11	2	3
40	14	11	6	6	1
41	15	11	9	–5	3
42	23	16	14	–5	3
43	17	6	8	5	1
44	17	9	9	1	1
45	17	4	5	0	1
46	15	3	4	–3	1
47	15	10	4	2	1
48	19	12	13	–3	5
49	20	15	14	4	3
50	17	9	7	2	1

Student-Teachers: Scores of Rorschach Rating Scale

Case No.	Int. Level	Con-trol	Creat. Pot.	Int. Ext. Bal.	Lev. of Asp.
1	17	13	20	–1	3
2	14	12	12	0	1
3	18	6	11	–4	2
4	18	12	14	2	3
5	17	12	14	3	3
6	23	14	16	–7	3
7	21	12	22	0	3
8	16	10	11	5	1
9	22	13	16	2	3
10	20	11	15	–2	3

Case No.	Int. Level	Control	Creat. Pot	Int. Ext. Bal	Lev. of Asp.
11	18	12	14	–1	3
12	18	8	10	2	3
13	19	11	13	0	3
14	21	14	17	–1	3
15	16	9	10	2	3
16	17	13	13	–3	3
17	14	11	14	2	1
18	20	12	20	–3	4
19	21	10	14	–2	3
20	16	9	9	–3	3
21	18	11	12	–6	3
22	23	15	16	1	3
23	17	9	9	5	1
24	17	12	14	2	1
25	16	10	11	–3	3
26	24	13	17	1	3
27	15	4	7	1	1
28	15	11	6	–1	1
29	16	7	10	–5	3
30	22	13	19	–4	3
31	15	9	8	2	1
32	19	10	14	–4	3
33	17	10	12	–2	3
34	17	12	12	1	3
35	19	10	14	–2	4
36	20	15	17	3	3
37	18	12	14	4	3
38	21	16	18	–5	3
39	15	11	9	–5	3
40	19	6	7	–6	3
41	20	10	13	–1	3
42	15	2	3	–2	1
43	16	14	9	–4	3
44	17	15	11	–1	4
45	20	13	14	–6	4
46	18	11	7	–4	3
47	18	6	10	–5	3
48	15	9	10	–3	3
49	17	9	10	–3	3
50	20	13	18	–3	4

Engineering Students: Scores of TAT (Form Variables)

Case No.	Organisation	Imagination	Language
1	26	32	34
2	35	31	28
3	36	33	30
4	37	27	33
5	30	36	36
6	38	35	32
7	35	34	30
8	36	35	34
9	34	32	32
10	37	36	31
11	39	37	33
12	30	29	30
13	35	36	28
14	36	34	29
15	34	32	30
16	33	30	30
17	29	35	32
18	38	37	36
19	32	36	32
20	38	34	35
21	36	32	32
22	33	36	34
23	35	35	32
24	39	33	34
25	34	32	29
26	36	27	32
27	36	36	33
28	32	35	32
29	35	34	28
30	36	35	32
31	32	34	32
32	37	36	35
33	35	31	31
34	34	36	32
35	34	35	30
36	36	33	34
37	34	36	32
38	28	34	36
39	30	35	30
40	35	29	35

Case No.	Organisation	Imagination	Language
41	36	35	34
42	34	33	29
43	37	36	30
44	36	34	34
45	35	35	32
46	33	33	31
47	36	34	34
48	38	35	30
49	34	36	34
50	35	33	31

Law Students: Scores of TAT (Form Variables)

Case No.	Org.	Ima.	Lang.
1	30	31	32
2	32	32	34
3	33	30	33
4	35	30	34
5	32	32	35
6	34	34	36
7	32	33	34
8	31	34	35
9	32	30	34
10	35	35	30
11	37	34	34
12	32	28	35
13	33	32	36
14	32	33	30
15	28	30	32
16	31	32	30
17	30	34	32
18	35	33	32
19	31	35	34
20	32	30	30
21	34	33	34
22	31	34	30
23	30	35	34
24	34	30	28
25	31	32	33
26	35	30	34
27	34	32	32
28	30	31	35
29	32	33	34

Case No.	Org.	Ima.	Lang.
30	34	32	34
31	31	33	33
32	35	28	36
33	32	33	35
34	31	30	34
35	29	31	28
36	34	32	31
37	32	33	35
38	30	32	30
39	31	30	29
40	32	31	30
41	34	33	32
42	32	31	30
43	33	32	32
44	34	33	36
45	32	34	26
46	31	28	32
47	33	29	33
48	34	36	32
49	32	35	30
50	31	32	33

Medical Students: Scores of TAT (Form Variables)

Case No.	Org.	Ima.	Lang.
1	25	30	30
2	28	32	33
3	30	31	31
4	33	32	30
5	31	29	32
6	32	30	30
7	30	32	31
8	31	33	32
9	30	30	30
10	32	36	28
11	34	28	36
12	29	30	28
13	30	28	30
14	28	30	34
15	30	29	30
16	29	33	28
17	32	30	29

Case No.	Org.	Imag.	Lang.
18	32	35	35
19	28	31	31
20	30	32	36
21	30	31	35
22	28	30	33
23	29	34	29
24	32	31	30
25	31	30	28
26	37	31	31
27	30	30	30
28	31	32	34
29	30	28	30
30	33	29	32
31	30	32	30
32	33	30	32
33	30	35	31
34	28	32	30
35	29	31	35
36	32	32	32
37	31	31	31
38	29	30	34
39	32	32	36
40	28	32	34
41	30	34	31
42	31	26	32
43	30	28	34
44	29	29	30
45	31	33	28
46	30	31	30
47	32	34	32
48	28	32	31
49	30	30	35
50	32	29	30

Student-Teachers: Scores of TAT (Form Variables)

Case No.	Org.	Ima.	Lang.
1	28	28	32
2	30	33	34
3	32	32	35
4	34	30	28
5	33	31	34
6	35	32	35
7	31	33	37
8	32	30	34
9	31	31	35
10	29	34	36
11	30	30	33
12	28	31	36
13	32	33	32
14	31	32	35
15	32	31	34
16	30	32	33
17	37	33	35
18	33	28	34
19	32	34	36
20	33	32	31
21	32	30	30
22	40	28	28
23	32	33	26
24	29	35	33
25	33	31	36
26	30	32	35
27	32	31	31
28	30	30	30
29	31	32	36
30	29	30	35
31	33	29	34
32	30	33	34
33	31	31	33
34	43	34	37
35	30	32	36
36	33	30	34
37	30	28	33
38	31	34	38

Case No.	Org.	Ima.	Lang.
39	34	29	34
40	30	32	32
41	32	33	36
42	30	30	35
43	29	31	27
44	32	32	35
45	30	30	33
46	31	32	36
47	31	31	34
48	28	34	33
49	29	31	35
50	30	32	36

Engineering Students: Scores of TAT (**Needs**)

Case No.	Ach.	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
1	12	6	6	9	5	6	3	6	3	3
2	12	4	3	10	4	8	6	9	6	4
3	10	9	6	8	6	6	0	3	7	3
4	14	0	9	6	6	5	3	4	6	6
5	11	6	10	9	3	8	6	8	3	3
6	15	8	3	6	7	6	4	0	3	9
7	28	7	6	16	10	7	5	4	0	7
8	16	10	12	9	6	5	3	3	3	4
9	16	12	3	3	8	6	6	6	0	0
10	20	9	0	6	9	3	3	9	6	10
11	17	14	6	6	8	5	8	6	0	6
12	21	9	10	8	5	6	9	3	9	3
13	12	6	6	3	7	3	6	9	3	0
14	12	10	7	6	5	8	4	4	6	9
15	25	12	4	8	3	6	5	0	3	6
16	10	6	6	6	0	10	6	3	9	3
17	16	0	3	7	6	6	3	6	0	6
18	16	9	6	9	8	7	3	4	6	4
19	18	5	3	5	5	3	0	6	3	3
20	12	4	6	9	6	0	4	3	6	6
21	15	4	9	9	3	3	6	3	3	0
22	20	10	6	10	0	10	3	0	9	4

Case No.	Ach.	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
23	23	6	12	6	4	5	6	3	6	3
24	12	12	10	8	6	0	4	0	0	3
25	13	8	0	3	12	3	3	3	0	6
26	13	9	9	10	6	4	10	6	6	6
27	21	6	6	9	7	0	6	3	4	4
28	9	0	0	11	3	6	6	6	0	9
29	12	12	6	8	8	8	7	7	6	6
30	17	10	9	9	9	6	3	9	6	0
31	9	6	6	11	6	9	7	6	3	3
32	16	3	3	6	5	7	6	3	0	10
33	12	9	6	7	3	3	8	6	6	8
34	21	8	5	6	0	6	3	8	3	6
35	11	10	0	8	8	3	9	3	0	9
36	9	12	4	10	6	0	6	6	3	6
37	18	3	9	6	5	8	3	3	6	3
38	12	6	6	9	7	10	0	0	6	0
39	16	15	3	10	6	3	3	9	3	6
40	18	6	6	6	4	0	6	5	3	6
41	10	4	3	9	3	3	6	6	0	6
42	12	10	10	6	10	6	6	4	3	3
43	15	9	0	6	6	6	0	6	8	9
44	20	6	6	8	9	6	3	9	6	8
45	11	8	6	10	8	3	6	10	3	5
46	15	9	3	6	5	6	14	12	3	4
47	12	10	4	6	4	0	9	8	6	3
48	6	6	0	8	9	19	3	0	3	0
49	24	6	6	6	6	6	6	6	0	6
50	21	3	3	7	6	0	8	3	3	6

Law Students: Scores of TAT (Needs)

Case No.	Ach.	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
1	9	9	10	6	6	6	6	3	6	0
2	10	3	6	12	3	9	6	6	3	4
3	7	6	12	9	9	8	3	4	4	3
4	6	3	6	11	7	3	6	9	4	4
5	6	6	12	6	3	12	9	12	0	0
6	4	9	9	8	9	10	3	3	3	3
7	10	6	6	15	12	9	6	5	3	6
8	9	12	10	11	8	6	0	0	0	3
9	12	9	6	9	6	3	8	4	4	0

Case No.	Ach.	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
10	6	6	9	6	10	0	6	8	0	6
11	14	12	9	12	7	3	7	3	6	0
12	15	10	12	9	6	6	4	11	3	5
13	10	6	8	6	9	0	10	3	4	6
14	4	9	10	3	8	9	8	8	3	3
15	15	6	8	10	6	6	6	3	0	4
16	6	3	12	8	3	12	9	0	6	4
17	9	3	6	9	0	10	3	9	3	3
18	6	8	7	12	6	8	6	3	3	3
19	9	4	6	10	3	6	3	6	0	4
20	16	6	3	14	9	9	6	0	6	0
21	14	5	12	16	6	6	5	4	4	9
22	10	9	9	11	3	9	6	6	3	3
23	10	3	15	12	6	6	0	6	3	3
24	10	10	6	9	8	3	6	3	3	5
25	6	6	7	8	9	0	3	3	3	3
26	9	6	10	12	3	6	12	3	4	4
27	12	3	9	10	6	3	9	0	6	3
28	6	3	3	9	5	0	7	6	3	6
29	10	10	4	6	6	9	11	8	3	4
30	15	11	10	11	10	3	6	6	7	9
31	10	9	6	15	3	10	3	5	6	0
32	6	6	5	13	6	8	4	6	3	6
33	3	9	6	6	0	6	10	9	0	0
34	12	6	8	10	5	5	4	6	0	3
35	9	3	3	9	6	4	10	0	4	3
36	6	10	9	7	9	3	6	6	0	3
37	8	6	4	10	3	9	9	3	9	0
38	9	3	12	12	6	12	6	5	5	3
39	6	12	3	12	8	0	6	8	0	3
40	9	10	5	10	5	3	5	7	7	3
41	6	6	3	11	0	0	9	3	3	3
42	9	8	3	9	9	6	6	7	3	0
43	6	12	5	6	6	8	7	9	9	6
44	12	6	10	16	6	5	3	10	6	4
45	10	6	6	9	7	4	9	9	0	3
46	9	10	8	11	6	0	10	8	3	6
47	6	6	5	8	9	3	6	0	4	3
48	5	0	6	9	7	9	5	9	3	6
49	9	3	3	10	3	6	9	0	3	0
50	9	9	0	11	6	8	6	6	0	3

Medical Students: Scores of TAT (Needs)

Case No.	Ach.	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
1	10	6	9	7	4	3	6	4	0	3
2	9	3	9	9	6	7	3	9	6	6
3	12	9	10	6	8	0	9	6	5	0
4	9	6	6	9	5	9	6	10	6	3
5	8	0	11	0	0	10	10	6	3	3
6	10	6	12	6	6	8	0	6	0	0
7	12	8	9	12	9	6	9	6	0	6
8	12	9	6	9	6	3	8	3	3	3
9	10	10	5	10	7	9	10	6	9	6
10	9	12	6	0	6	6	6	7	3	3
11	10	10	9	3	9	4	8	6	0	9
12	18	8	10	6	7	0	5	8	6	4
13	10	0	7	3	8	6	12	6	3	3
14	9	9	9	0	6	6	9	7	0	6
15	20	10	6	6	0	7	6	6	4	3
16	4	0	10	3	6	8	3	4	5	3
17	10	3	6	3	3	11	0	6	3	0
18	10	6	8	6	9	5	10	0	6	3
19	12	3	6	6	6	4	6	5	3	6
20	12	9	6	4	3	8	3	3	4	4
21	16	6	9	6	5	6	6	0	3	5
22	15	8	7	3	3	4	4	6	6	0
23	15	6	11	6	5	6	3	5	0	3
24	14	9	12	10	3	3	8	4	3	6
25	6	10	10	3	10	6	6	6	0	4
26	12	9	9	6	5	3	9	9	3	3
27	18	8	8	6	8	0	10	3	6	6
28	12	6	5	3	3	4	9	3	3	8
29	10	9	6	3	6	6	8	6	4	6
30	18	9	3	6	8	5	6	8	0	8
31	9	10	4	9	0	6	5	4	6	0
32	10	6	5	4	4	8	3	3	3	9
33	6	0	9	3	5	6	12	6	6	6
34	15	9	7	6	4	4	3	9	6	4
35	9	0	3	4	8	0	9	4	5	6
36	0	15	6	6	6	6	5	0	3	0
37	10	9	5	0	3	7	8	4	8	4
38	9	6	10	6	5	11	9	3	3	6
39	13	10	9	9	9	6	5	6	3	0
40	10	12	11	7	3	5	8	0	6	4
41	6	6	0	6	3	0	9	3	3	6

Case No.	Ach	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
42	10	10	6	3	8	5	7	6	0	0
43	10	12	6	0	5	8	6	8	6	8
44	16	8	12	6	6	3	6	14	5	3
45	12	3	8	7	5	6	8	6	0	5
46	16	9	9	0	3	3	9	9	4	0
47	3	10	6	9	6	4	6	6	4	0
48	6	3	9	8	8	6	3	3	0	3
49	12	6	0	9	0	9	4	6	6	3
50	16	8	6	8	5	6	9	0	3	0

Student-Teachers: Scores of TAT (Needs)

Case No.	Ach.	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
1	7	4	12	6	3	0	9	5	3	6
2	6	3	11	3	0	6	6	3	0	0
3	3	6	9	5	6	10	8	8	6	3
4	3	3	7	7	9	6	12	6	4	3
5	0	3	15	3	6	9	11	9	0	0
6	6	5	10	3	8	6	6	5	3	3
7	9	9	11	10	8	5	15	0	9	3
8	6	6	9	6	5	6	10	6	0	6
9	10	10	14	12	6	6	6	3	6	3
10	6	6	10	3	8	0	3	6	0	4
11	12	9	12	0	6	3	9	10	4	7
12	10	10	16	3	4	5	6	6	5	3
13	14	6	9	6	6	3	14	5	0	6
14	5	12	12	3	9	9	12	6	3	0
15	18	9	10	4	3	8	9	3	3	6
16	3	6	15	9	3	9	0	8	4	6
17	14	0	8	6	9	8	3	5	6	0
18	6	6	6	3	6	6	8	3	4	6
19	10	3	9	5	4	6	12	8	3	3
20	10	6	0	3	8	7	6	6	3	3
21	12	4	16	4	6	5	9	3	6	4
22	6	6	10	0	5	6	10	9	3	4
23	10	8	18	9	6	3	6	8	3	0
24	12	12	16	4	7	6	9	10	6	3
25	3	9	9	6	8	4	8	8	3	6
26	10	10	15	6	4	6	16	6	5	6
27	6	3	10	7	7	3	12	8	4	4
28	3	0	16	0	0	5	9	0	0	7

Case No.	Ach.	Def.	Aba.	Auto.	Aggr.	Domi.	Nurt.	Succ.	Affi.	Count
29	6	8	0	6	9	9	10	9	3	3
30	12	12	12	4	6	8	8	6	6	6
31	6	12	9	6	8	3	6	3	3	3
32	0	9	8	6	5	9	3	0	10	8
33	8	3	12	3	3	5	9	9	3	0
34	10	6	10	5	6	6	0	10	6	6
35	6	6	9	6	9	3	12	6	4	5
36	10	9	11	3	3	4	8	7	6	6
37	12	6	7	3	4	6	6	5	6	5
38	10	3	16	7	3	9	10	6	6	3
39	9	6	10	8	6	4	6	9	4	0
40	6	9	9	6	0	3	9	6	9	5
41	3	9	6	4	6	6	10	3	4	6
42	3	10	9	3	7	4	11	8	3	3
43	12	6	12	5	3	9	8	10	7	9
44	10	4	10	6	8	4	6	12	4	0
45	9	6	6	6	6	5	10	8	3	0
46	14	6	12	3	4	0	12	7	9	8
47	3	12	9	6	5	3	8	6	3	4
48	4	6	18	9	6	6	6	0	3	3
49	6	3	9	9	3	8	5	3	4	4
50	12	6	6	6	4	7	10	3	6	3

APPENDIX B

(Research Project of S.K. Pal)

INFORMATION SCHEDULE

Date——

Name———— Sex————

Class..............................Standard or year..............

Name of the Institution...

Caste.........................Religion................................

Date of Birth......................Age...............................

Name of the District of which you are a permanent resident...............

....

Coming from Urban/Rural area...

Day scholar/Hosteler..

Local Address..

Permanent Address...

Father's name...............Father's Occupation.....................

Average monthly income of the family..................................

Number of brothers and sisters...

Total number of members in the family.................................

Married/Unmarried...

Examinations Passed:

Name of Examination	Year	Board/University	Division	Subjects
High School				
Intermediate				
B.A./B.Sc./B.Com				
M.A./M.Sc./M.Com				
Any other				

....

Professional Experience if any:

Name of the Post held	Employer	Dates of Employment	Salary

Your Hobbies and interests..

Would you join the profession after the training? Yes/Not sure/No

Why have you chosen this profession? Give reasons:

1.
2.
3.

Would you change your profession if you get an opportunity? Yes/Not sure/No.

S.C.E.R.T., West Bengal Library Calcutta 25/3, C. Road

RORSCHACH RECORD SHEET

Name:— Age:—

Institution:—

Date:— Time:—

....

No. of Cards and I.R.T. Responses Scoring

....

Case No.......................... Name....................

RORSCHACH RATING SCALE

(Pepared by S.K. Pal)

I. INTELLECTUAL LEVEL

(i) Intellectual Capacity

(Highest F. L. R.)
Score — Range
5 – 4.0 and above
4 – 3.0 " "
3 – 2.0 " "
2 – 1.0 " "
1 – 0.9 and below

(ii) Intellectual Efficiency

(Av. Wtd. F.L.R.)
5 – 2.0 and above
4 – 1.5 to 1.9
3 – 1.0 to 1.4
2 – 0.5 to 0.9
1 – 0.0 to 0.4

(iii) Quantity and Quality of M

5 – 5 M and above with or without III (P)
4 – 4 M with or without (III (P)
3 – 3 M " " "
2 – 1 or 2 M (1–M without III (P) or 2 M with or without III(P)
1 – 1 M onIII(P)
0 – No M
Deduct .5 for every M in (H) or (Hd)

(iv) Quantity and Quality of W

Score – Range
5 – W over 30% F.L.R. 1.5 and above
4 – (W over 30% " 1.0 to 1.4
(W 20% to 30% " 1.5 and above
3 – (W over 30% F.L.R. 0.8 to 0.9
(W 20% to 30% " 1.0 to 1.4
(W less than 20% 1.5 & above
2 – W less than 20% F.L.R. 1.0 to 1.4
1 – W " " 0.5 to 0.9
0 – No W

(v) Quantity and Quality of O

5 – 4 O and above F.L.R. 1.5 & above
4 – 4 O " " 1.0 to 1.4
3 – 2 or 3 O.F.L.R 1.5 & above
2 – 2 or 3 O " 1.0 to 1.4
1 – 1 O
0 – No O

(vi) Variety of Content

4 – Above 8 contents
3 – 7 to 8 "
2 – 5 to 6 "
1 – 3 to 4 "
0 – 2 or below "

(vii) Succession

3 – 7 to 9 systematic succession
2 – 3 to 6 "
1 – (Fewer than 3 "
(10 " "

TOTAL SCORE OF SECTION I ....

II. CONTROLS

(i) Outer Control

(ii) Socialised Control

Score—Range

5 – FC>CF + C (both sides present)

4 – FC present but no CF + C

3 – CF + C=FC

2 – CF + C>FC

1 – FC and CF + C absent

0 – Only CF + C present

(b) Control through withdrawal

5 – Chro=Achro

3 – Achro>Chro or Chro>Achro

1 – (Achro>Chro by 2 : 1 or more
(Chro>Achro by 2 : 1 or more

(ii) **Inner Control**

5 – M>FM + m (both sides present m 2 or less)

4 – M present but no FM + m

3 – M = FM + m (both sides present m 2 or less)

2 – FM+m>M " " "

1 – Only FM+m present

0 – M, FM, m all absent

Deduct .5 for every m above 2 upto 1.5

(iii) **Repressive Control**

3 – F% 21 to 50

2 – F% 51 to 70

1 – F% 71 to 80

0 – F% more than 80

TOTAL SCORE OF SECTION II ....

III. CREATIVE POTENTIAL

(i) In Imaginal Resources (M : FM)

Score—Range

5 – $M > FM$ (M and FM both present)
4 – $M = FM$,, ,,
3 – Only M present
2 – $M > FM$ (both present)
1 – Only FM present
0 – M and FM both absent

(ii) In Imaginal Resources (FM)

5 – 5 FM or above
4 – 4 FM
3 – 3 FM
2 – 2 FM
1 – 1 FM
0 – No FM

(iii) In Imaginal Resources (m)

3 – 3 m or above
2 – 2 m
1 – 1m
0 – No m

(iv) In Object Relations (M)

5 – 5 FM or above
4 – 4M
3 – 3M
2 – 2 M
1 – 1 M
0 – No M

(v) In Object Relations (FC)

5 – 3 FC or above, F.L.R. 1.5 or more
4 – 3 FC or above, F.L.R. 1 to 1.4
3 – 2 FC, F.L.R. 1.5 or more
2 – 2 FC, F.L.R. 1 to 1.4
1 – 1FC
0 – No FC

vi) In object Relations (Fc)

5 – 3 Fc or above, F.L.R. 1.5.or more
4 – 3 Fc or above, F.L.R. 1 to 1.4
3 – 2 Fc, F.L.R. 1.5 or above
2 – 2 Fc, F.L.R. 1 to 1.4
1 – 1 Fc
0 – No Fc

TOTAL SCORE OF SECTION III....

IV. INTROVERSIVE-EXTRATENSIVE BALANCE

(i) **M: Sum C**

Score — Range
–3 – (4 : 1
(3 : 0 and above
–2 – (3 : 1
(2 : 0
–1 – (2 : 1
(1 : 0
0 – 1 : 1
1 – (1 : 2
(0 : 1
2 – (1 : 3
(0 : 2
3 – (1 : 4
(0 : 3 and above

(ii) **(FM + m) : Fc + c + C')**

–3 – (4 : 1
(3 : 0 and above
–2 – (3 : 1
(2 : 0
–1 – (2 : 1
(1 : 0
0 – 1 : 1
1 – (1 : 2
(0 : 1
2 – (1 : 3
(0 : 2
3 – (1 : 4
(0 : 3 and above

(iii) **Percentage of R to VIII, IX and X**

–1 – Less than 30%
0 – 30 to 40%
1 – Above 40%

TOTAL SCORE OF SECTION IV....

V. LEVEL OF ASPIRATION (W:M)

5 – W : M (2 : 1)
4 – W = M
3 – W >(2M or W <)2M
2 – M present but W not present
1 – W present but M not present
0 – Neither W nor M present

TOTAL SCORE OF SECTION V....

Research Project of (S.K. Pal)

T.A.T. Analysis Blank

Date............Examiner........

Name..............................Sex.............................

Date of Birth..................Age.............Married/unmarried......

Class....................School.............................

Address...

Father's Occupation and income...............................

Number of Sibs...........Brothers.............Sisters.............

Parents alive or dead..................................

Any other detail..

....

Analysis of Form

Rate the following variables on a five point scale

Picture No. Form Variables	1	2	3 BM	6 BM	13 MF	7 BM	8 BM	4	17 BM	16	Total Score
(i) Organisation											
(ii) Phantasies-Imagination											
(iii) Language											

Analysis of content

A. Hero Identification

Picture No.	1	2	3	6	13	7	8	4	17	16	Total
Type			BM	BM	MF	BM	BM		BM		Score
S.S.											
S.H.											
S.L.											
O.S.											
O.H.											
O.L.											

B. Interpersonal Relationships and Outcome

Picture No.	1	2	3	6	13	7	8	4	17	16	Total
			BM	BM	MF	BM	BM		BM		Score
Variables											
Interper. Rel.											
Outcome											

C. Analysis of Needs

Rate the following variables on a five-point scale on the basis of their intensity, duration and frequency.

Picture No.	1	2	3	6	13	7	8	4	17	16	Total
			BM	BM	MF	BM	BM		BM		Score
Needs											
1. Achievement											
2. Deference											
3. Abasement											
4. Autonomy											
5. Aggression											
6. Dominance											
7. Nurturance											
8. Succorance											
9. Affiliation											
10. Counteraction											

INDIAN ADAPTATION OF ALLPORT VERNON'S STUDY OF VALUES 1958 EDITION) by Dr K. Ray-Chowdhury, Department of Psychology, Muslim University, Aligarh, India.

PART I

Directions: A number of controversial statements or questions with two alternative answers are given below. Indicate your personal preferences by writing appropriate figures in the boxes to the right of each question. Some of the alternatives may appear equally attractive or unattractive to you. Nevertheless, please attempt to choose the alternative that is relatively more acceptable to you. If any item or items seem unreal to you because of their foreign culture pattern, try to imagine the situation and record your judgement or preference accordingly. For each question you have three points that you may distribute in any of the following combinations.

If you agree with alternative (a) and disagree with (b), write 3 in the first box and 0 in the second box

If you agree with (b), disagree with (a), write 0 in the first box and three in the second

If you have a slight preference for (a) over (b), write 2 in the first box and 1 in second

If you have a slight preference for (b) over (a), write 1 in the first box and 2 in the second,

Do not write any combination of numbers except one of these four. There is no time limit, but do not linger over any one question or statement, and do not leave out any of the questions unless you find it really impossible to make a decision.

1. The main object of scientific research should be the discovery of truth rather than its practical applications, (a) Yes; (b) No.
2. Taking the Bible as a whole (If you are a Muslim take Quran and if a Hindu, take Gita in place of Bible), one should regard it from the point of view of its beautiful mythology and literary style rather than a spiritual revelation. (a) Yes; (b) No.
3. Which of the following men do you think should be judged as contributing more to the progress of mankind? (a) Aristotle, the philosopher; (b) Abraham Lincoln or Gandhi.
4. Assuming that you have sufficient ability, would you prefer to be: (a) a banker; (b) a politician?

5. Do you think it is justifiable for great artists, such as Beethoven (the German composer of symphonies, concertoes and operas, (1770—1827 A.D.), Wagner (the German composer of profoundly original and romantic music, (1813—83 A.D.), and Byron (great English poet of revolutionary spirit, (1788-1824) to be selfish and negligent of the feelings of others? (a) Yes; (b) No.

6. Which of the following branches of study do you expect ultimately will prove more important for mankind? (a) mathematics; (b) theology.

7. Which would you consider the more important function of modern leaders? (a) to bring about the accomplishment of practical goals; (b) to encourage followers to take a greater interest in the rights of others.

8. When witnessing a gorgeous ceremony (ecclesiastical such as special services in the churches, mosques, temples); or academic such as prize-distribution in schools or colleges or (convocation; induction into office etc.) are you more impressed. (a) by the colour and pageantry of the occasion itself; (b) by the influence and strength of the group?

9. Which of these character traits do you consider the more desirable? (a) high ideas and reverence; (b) unselfishness and sympathy.

10· If you were a university professor and had the necessary ability, would you prefer to teach: (a) poetry; (b) chemistry and physics?

11. If you should see the following news items with headlines of equal size in your morning paper, which would you read more attentively? (a) PROTESTANT (RELIGIOUS) LEADERS TO CONSULT ON RECONCILIATION; (b) GREAT IMPROVEMENTS IN MARKET CONDITIONS.

12. Under circumstances similar to those of Question 11? (a) SUPREME COURT RENDERS DECISION; (b) NEW SCIENTIFIC THEORY ANNOUNCED.

13. When you visit a cathedral or a mosque or a temple are you more impressed by a pervading sense of reverence and worship than by the architectual features and stained glass? (a) Yes; (b) No.

14. Assuming that you have sufficient leisure time, would you prefer to use it: (a) developing your mastery of a favourite skill; (b) doing volunteer social or public service work?

15. At an exposition, do you chiefly like to go to the buildings where you can see; (a) new manufactured products; (b) scientific (e.g. chemical) apparatus?

16. If you had the opportunity and if nothing of the kind existed in the community where you live, would you prefer to found: (a) a debating society or forum; (b) classical orchestra (i.e. a band musicians playing conventionally pure and refined music, like our rages and thumris, keeping a strict formality with the rules and regulations of the art)?

17. The aim of the churches at the present time should be: (a) to bring out altruistic (i.e. aspiration of good for others) and charitable tendencies; (b) to encourage spiritual worship and a "sense of communion with the highest" (feeling oneness with God).

18. If you had some time to spend in a waiting room and there were only two magazines to choose from, would you prefer: (a) Scientific age (a journal on scientific information); (b) Arts and Decorations (a journal on arts, decoration, crafts etc.)?

19. Would you prefer to hear a series of lectures on: (a) the comparative merits of the forms of Government in Britain and in the United State, (or those in India and in Britain); (b) the comparative development of the great religious faiths?

20. Which of the following would you consider the more important function of education? (a) its preparation for practical achievement and financial reward; (b) its preparation for participation in community activities and aiding less fortunate persons.

21. Are you more interested in reading accounts of the lives and works of men such as (a) Alexander (the great, 356-333, B.C., one of the greatest generals of antiquity who came to India in 326 B.C. during the reign of Poro), Julius Caesar (100-44 B.C., Roman soldier and statesman and a great orator, noted for his administrative reforms) and Charlemagne (742-814 A.D., Roman king and a great conqueror), (b) Aristotle (384-322 B.C., Greek philosopher), Socrates (469-399 B.C., Greek philosopher of great influence), and Kant (1724-1804 A.D., the German philosopher)?

22. Are our modern industrial and scientific developments signs of a greater degree of civilization, than those attained by any previous society, the Greeks, for example? (a) Yes; (b) No.

23. If you were engaged in an industrial organization (and assuming salaries to be equal), would you prefer to work: (a) as a counsellor for employees; (b) in an administrative position?

24. Given your choice between two books to read, are you more likely to select:
(a) THE STORY OF RELIGION IN AMERICA OR INDIA;
(b) THE STORY OF INDUSTRY IN AMERICA OR INDIA.

25. Would modern society benefit more from: (a) more concern for the rights and welfare of citizens; (b) greater knowledge of the fundamental laws of human behaviour?

26. Suppose you were in a position to help raise standards of living, or to mould public opinion. Would you prefer to influence: (a) standards of living (b) public opinion?

27. Would you prefer to hear a series of popular lectures on; (a) the progress of social service work in your part of the country; (b) contemporary painters?

28. All the evidence that has been impartially accumulated goes to show that the universe has evolved to its present state in accordance with natural principles, so that there is no necessity to assume a first cause, cosmic purpose, or God behind it. (a) I agree with this statement; (b) I disagree.

29. In a paper, such as the New York Sunday Times (or the Hindustan Times the Statesman) are you more likely to read: (a) the real estate sections and the account of the stock market; (b) the section on picture galleries and exhibitions?

30. Would you consider it more important for your child to secure training in: (a) religion, (b) athletics?

PART II

Directions: Each of the following situations or questions is followed by four possible attitudes or answers. Arrange these answers in the order of your personal preference by writing, in the appropriate box at the right, a score of 4 3, 2 or 1. To the statement you prefer most give 4, to the statement that is second most attractive 3, and so on.

Example: If this were a question and the following statements were alternative choices you would place:

4 in the box if this statement appeals to you most.

3 in the box if this statement appeals to you second best.

2 in the box if this statement appeals to you third best.

1 in the box if this statement represents your interest or preference least of all.

You may think of the answers which would be preferably from your point of view to and of those listed. It is necessary, however, that you make your selection from the alternatives presented, and arrange all four in order of their desirability, guessing when your preferences are not distinct. If you find it really impossible to state your preference, you may omit the question. Be sure not to assign more than one 4, one 3, one 2 etc., for each question.

1. Do you think that a good government should aim chiefly at—(Remember to give your first choice, etc.)

   a. more aid for the poor, sick, old and displaced persons.
   b. the development of manufacturing and trade.
   c. introducing highest ethical principles into its policies and diplomacy
   d. establishing a position of prestige and respect among nations.

2. In your opinion, can a man who works in business all week best spend Sunday in—

   a. trying to educate himself by reading serious books.
   b. trying to win at golf, or racing, or playing Flash at stake.
   c. going to an orchestral concert.
   d. hearing a really good sermon.

3. If you would influence the educational policies of the public schools of some city, would you undertake—

   a. to promote the study and participation in music and fine arts.
   b. to stimulate the study of social problems.
   c. to provide additional laboratory facilities.
   d. to increase the practical value of courses.

4. Do you prefer a friend (of your own sex) who—
   a. is efficient, industrious and of a practical turn of mind.
   b. is seriously interested in thinking out his attitude toward life as a whole.
   c. possesses qualities of leadership and organizing ability.
   d. shows artistic and emotional sensitivity.

5. If you lived in a small town and had more than enough income for your needs, would you prefer to—

   a. apply to productivity to assist commercial and industrial development.
   b. help to advance the activities of local religious group.
   c. give it for the development of scientific research in your locality.
   d· give it to the Family Welfare Society.

6. When you go to the theatre, do you as a rule, enjoy most—

   a. plays that treat the lives of great men.
   b. ballet or similar imaginative performances.
   c. plays that have a theme of human suffering and love.
   d. problem plays that argue consistently for some point of view.

7. Assuming that you are a man with the necessary ability, and that the salary for each of the following occupations is the same, would you prefer to be a—

   a. mathematician.

   b. sales manager

   c. clergyman.

   d. politician.

8. If you had sufficient leisure and money, would you prefer to—

   a. make a collection of fine sculptures, paintings.

   b. establish a centre for the care and training of the feeble minded.

   c. aim at senatorship (parliamentarian) or a seat in the cabinet.

   d. establish a business or financial enterprise of your own.

9. At an evening discussion with intimate friends of your own sex are you more interested when you talk about—

   a. the meaning of life.

   b. development in science.

   c. literature.

   d. socialism and social 'amelioration' (improvement).

10. Which of the following would you prefer to be during part of your next summer vacation if your ability and other conditions would permit—

    a. write and publish an original biological essay or article.

    b. stay in some secluded part of the country where you can appreciate fine scenary.

    c. enter a local tennis or other athletic tournament.

    d. get experience in some new line of business.

11. Do great exploits and adventures of discovery such as Columbus's (Italian explorer and discoverer of America, 1451–1506 A.D.), Magelian's (Portugese sailor who led the first expedition to circumnavigate the globe, 1470-1521 A.D.), Byrd's (American explorer and sailor, pioneer in polar aviation of later nineteenth century), and Amundsen's (Norwegian explorer, the first to reach the south pole, shortly before Scott, 1872-1928 A.D.) seem to you significant because—

    a. they represent conquests by men over difficult forces of nature.

    b. they add to our knowledge of geography, Meteoriology, oceanography etc.

    c. they would develop human interest and international feelings throughout the world.

    d. they contribute each in small way to an ultimate understanding of the universe.

12. Should one guide one's conduct according to, or develop one's chief loyalties toward—

    a. one's religious faith.
    b. ideals of beauty.
    c. one's occupational organisation and associates.
    d. ideals of charity.

13 To what extent do the following famous persons interest you—

    a Florence Nightingale (English pioneer of modern Hospital nursing 1872-1928 A.D.)
    b. Napolean (a great conqueror and emperor of the French, 1769-1821 A.D.)
    c. Henry Ford (American industrialist and a mass manufacturer of automobiles, one of the richest men of the world, 1863-1947 A.D.)
    d. Galileo (Italian astronomer and philosopher, 1564-1642 A.D.)

14. In chosing a wife would you prefer a woman who—
(women answer the alternative form below)

    a. can achieve social prestige, commanding administration from others.
    b. likes to help people.
    c. is fundamentally spiritual in her attitudes toward life.
    d. is gifted along artistic lines.

    (For women) would you prefer a husband who—
    a. is successful in his profession, commanding admiration from others.
    b. likes to help people.
    c. is fundamentally spiritual in his attitudes towards life.
    d. is gifted along artistic lines.

15. Viewing Leonardo da Vinci's picture, THE LAST SUPPER (a wonderful painting of Leonardo which depicts Lord Christ taking his last supper before crucifixion, with his most faithful disciples including Judas, who betrayed Lord Christ and about whose plan of betrayal the Lord spoke during the supper in the following words; "before the crow cries in the morning, I will be betrayed", and there appeared an apparent sense of guilt in Judas' facial (expression) would you tend to think of it—

    a. as expressing the highest spiritual aspirations and emotions.
    b. as one of the most priceless and irreplaceable pictures ever painted.
    c. in relation to Leonardo's versatillity and its place in history.
    d. the quintessence (Purest manifestation) of harmony and design.

APPENDIX C

Mean, Median, Mode (only E.S.), Range and Standard Deviation of Important Rorschach Components occurring among 50 Engineering students (ES), 50 Law Students (LS), 50 Medical Students (MS) 50 Student-Teachers (ST) and four groups taken as one group i.e., 200 Normal Adult Students (NAS), (only Mean):

Rorschach Component	Group	Mean	Mdn	Mode	Range	S.D.
R	ES	26.08	22.50	19.38	11-56	10.33
	LS	24.52	21.39	-	13-86	12.78
	MS	22.28	20.50	-	12-56	9.53
	ST	30.28	26.34	-	13-70	13.34
	NAS	25.79	-	-	-	-
P	ES	4.06	4.00	4.29	2-9	1.24
	LS	3.34	3.41	-	0-7	1.32
	MS	3.46	3.47	-	1-6	1.08
	ST	4.20	3.74	-	1-8	1.59
	NAS	3.76	-	-	-	-
O	ES	3.68	3.68	2.96	2-8	1.46
	LS	2.42	2.44	-	0-6	1.34
	MS	2.66	2.23	-	1-6	1.23
	ST	3.14	3.07	-	1-7	1.17
	NAS	2.97	-	-	-	-
W	ES	8.66	6.85	5.56	1-37	7.05
	LS	10.28	9.66	-	2-33	6.16
	MS	7.96	7.50	-	1-23	4.50
	ST	8.06	7.25	-	0-32	5.74
	NAS	8.74	-	-	-	-
D	ES	12.78	12.31	12.00	0-30	7.33
	LS	11.50	9.50	-	0-38	7.67
	MS	10.92	9.82	-	1-33	5.79
	ST	15.00	13.73	-	2-35	8.08
	NAS	12.55	-	-	-	-

Rorschach Component	Group	Mean	Mdn	Mode	Range	S.D.
d	ES	3.02	1.42	0.58	0-15	3.58
	LS	1.38	2.22	-	0-24	3.57
	MS	2.38	1.58	-	0-14	3.22
	ST	3.30	2.36	-	0-18	4.48
	NAS	2.52	-	-	-	-
Dd	ES	0.78	0.64	0.51	0-13	2.26
	LS	0.80	0.69	-	0- 8	1.57
	MS	0.48	1.06	-	0-10	1.59
	ST	2.20	1.64	-	0-12	3.29
	NAS	1.06	-	-	-	-
S	ES	0.84	0.72	0.55	0-6	1.25
	LS	0.56	0.66	-	0-5	1.08
	MS	0.54	0.69	-	0-4	1.06
	ST	1.72	1.35	-	0-8	1.99
	NAS	0.91	-	-	-	-
M	ES	2.68	2.45	2.23	0-9	2.22
	LS	2.02	1.35	-	0-16	2.56
	MS	1.34	0.89	-	0-9	1.79
	ST	2.46	1.42	-	0-9	2.36
	NAS	2.12	-	-	-	-
FM	ES	3.02	2.28	1.46	0-14	2.64
	LS	4.02	3.36	-	1-23	3.72
	MS	2.70	2.50	-	0-11	1.96
	ST	4.14	3.52	-	0-18	2.97
	NAS	3.47	-	-	-	-
m	ES	0.32	0.56	0.51	0-6	0.95
	LS	0.14	0.08	-	0-1	0.35
	MS	0.16	0.54	-	0-2	0.46
	ST	0.22	0.54	-	0-3	0.57
	NAS	0.21	-	-	-	-
k	ES	0.20	0.52	0.50	0-4	0.63
	LS	0.08	0.52	-	0-2	0.33
	MS	0.06	0.52	-	0-2	0.32
	ST	0.06	0.03	-	0-1	0.24
	NAS	0.10	-	-	-	-

Rorschach Component	Group	Mean	Mdn	Mode	Range	S.D.
K	ES	0.14	0.50	0.50	0-1	0.35
	LS	0.18	0.52	-	0-2	0.43
	MS	0.12	0.07	-	0-1	0.33
	ST	0.28	0.59	-	0-3	0.66
	NAS	0.18	-	-	-	-
FK	ES	0.22	0.54	0.50	0-4	0.67
	LS	0.06	0.03	-	0-1	0.24
	MS	0.10	0.06	-	0-1	0.30
	ST	0.26	0.56	-	0-2	0.56
	NAS	0.16	-	-	-	-
F	ES	13.96	12.66	12.34	1-32	6.38
	LS	14.20	13.95	-	3-56	8.77
	MS	13.84	12.67	-	5-40	6.66
	ST	16.96	14.50	-	3-43	10-21
	NAS	14.74	-	-	-	-
Fc	ES	2.20	1.67	0.77	0-7	2.09
	LS	0.74	0.75	-	0-3	0.91
	MS	1.20	0.97	-	0-5	1.25
	ST	1.54	1.11	-	0-8	1.69
	NAS	1.42	-	-	-	-
C'	ES	0.66	0.66	0.54	0-4	0.93
	LS	0.54	0.61	-	0-4	0.90
	MS	0.68	0.75	-	0.3	0.93
	ST	0.72	0.72	-	0-4	1.10
	NAS	0.65	-	-	-	-
FC	ES	2.40	1.58	0.65	0-7	2.05
	LS	2.36	2.10	-	0-10	1.96
	MS	1.92	1.35	-	0-10	2.12
	ST	3.36	2.84	-	0-10	2.52
	NAS	2.51	-	-	-	-
CF	ES	0.24	0.54	0.51	0-2	0.47
	LS	0.18	0.11	-	0-1	0.38
	MS	0.14	0.52	-	0-2	0.40
	ST	0.24	0.54	-	0-2	0.51
	NAS	0.20	-	-	-	-

Rorschach component	Group	Mean	Mdn	Mode	Range	S.D.
H	ES	3.40	2.95	2.43	0-12	2.83
	LS	3.32	2.50	-	0-19	3.50
	MS	1.58	0.93	-	0-9	2.15
	ST	3.84	2.83	-	0-18	4.23
	NAS	3.03	-	-	-	-
Hd	ES	1.26	1.01	0.60	0-10	1.92
	LS	0.34	0.56	-	0-4	0.74
	MS	0.40	0.59	-	0-5	0.92
	ST	1.00	0.85	-	0-6	1.37
	NAS	0.75	-	-	-	-
A	ES	7.80	6.93	5.68	2-31	4.75
	LS	7.28	6.31	-	2-27	4.49
	MS	7.80	7.40	-	1-25	4.39
	ST	9.36	8.73	-	3-21	4.28
	NAS	8.06	-	-	-	-
Ad	ES	1.40	1.06	0.63	0-6	1.59
	LS	1.10	0.88	-	0-11	2.05
	MS	0.90	0.75	-	0-9	1.59
	ST	1.82	1.17	-	0-7	2.13
	NAS	1.30	-	-	-	-
At	ES	2.32	1.67	0.68	0-10	2.10
	LS	2.44	1.42	-	0-12	2.68
	MS	4.40	3.81	-	0-16	3.69
	ST	2.32	2.03	-	0-7	1.88
	NAS	2.87	-	-	-	-
Obj	ES	3.76	2.62	1.78	0-16	3.60
	LS	2.96	2.71	-	0-16	3.06
	MS	2.72	2.39	-	0-15	2.53
	ST	2.86	2.44	-	0-9	2.41
	NAS	3.07	-	-	-	-
Pl	ES	1.56	1.28	0.72	0-6	1.55
	LS	1.94	1.29	-	0-8	1.88
	MS	1.54	1.02	-	0-8	1.79
	ST	2.48	2.03	-	0-9	2.18
	NAS	1.88	-	-	-	-

Rorschach Component	Group	Mean	Mdn	Mode	Range	S.D.
N	ES	2.06	1.06	0.59	0-12	2.98
	LS	1.58	1.29	-	0-6	1.72
	MS	0.92	0.85	-	0-4	1.21
	ST	2.00	1.50	-	0-8	1.86
-	NAS	1.62	-	-	-	-
Geog	ES	0.78	0.57	0.55	0-5	1.15
	LS	0.90	0.72	-	0-7	1.28
	MS	0.26	0.59	-	0-4	0.79
	ST	1.36	0.85	-	0-9	2.07
-	NAS	0.82	-	-	-	-
Arch	ES	0.26	0.56	0-52	0-2	0.56
	LS	0.64	0.61	-	0-4	0.99
	MS	0.44	0.56	-	0-4	0.75
	ST	1.22	1.17	-	0-5	1.34
-	NAS	0.64	-	-	-	-

Comparison of Engineering and Law students on Rorschach Components

Rorschach Components	Eng. Stu.		Law Stu.		t	P
	Mean	S.D.	Mean	S.D		
W	8.66	7.05	10.28	6.16	1.21	NS
D	12.78	7.33	11.50	7.67	0.84	NS
d	3.02	3.58	1.38	3.57	2.28	0.05
Dd	0.78	2.26	0.80	1.57	0.05	NS
S	0.84	1.25	0.56	1.08	1.27	NS
M	2.68	2.22	2.02	2.56	1.37	NS
FM	3.02	2.64	4.02	3.72	1.54	NS
m	0.32	0.95	0.14	0.35	1.28	NS
k	0.20	0.63	0.08	0.33	1.20	NS
K	0.14	0.35	0.18	0.43	0.40	NS
FK	0.22	0.67	0.06	0.24	1.60	NS
F	13.96	6·38	14.20	8.77	0.15	NS
Fc	2.20	2.09	0.74	0.91	4.42	0.01
C'	0.66	0.93	0.54	0.90	0.70	NS
FC	2.40	2.05	2.36	1.96	0.10	NS
CF	0.24	0.47	0.18	0.38	0.60	NS
H	3.40	2.83	3.32	3.50	0.12	NS
Hd	1.26	1.92	0.34	0.74	3.07	0.01
A	7.80	4.75	7.28	4.49	0.56	NS
Ad	1.40	1.59	1.10	2.05	0.81	NS
At	2.32	2.10	2.44	2.68	0.24	NS
Obj	3.76	3.60	2.96	3.06	1.19	NS
Pl	1.56	1.55	1.94	1.88	1.08	NS
N	2.00	2.98	1.58	1.72	0.86	NS
Geog	0.78	1.15	0.90	1.28	0.50	NS
Art & Des.	0.58	1.20	0.88	1.32	1.25	NS
Arch.	0.26	0.56	0.64	0.99	2.24	0.05

Comparison of Eng. Stu. and Med. Stu. on Rorschach Components

Rorschach Components	Eng. Stu.		Med. Stu.		t	P
	Mean	S.D.	Mean	S.D.		
W	8.66	7.05	7.96	4.50	0.59	NS
D	12.78	7.33	10.92	5.79	1.40	NS
d	3.02	3.58	2.38	3.22	0.94	NS
Dd	0.78	2.26	0.48	1.59	0.77	NS
S	0.84	1.25	0.54	1.06	1.36	NS
M	2.68	2.22	1.34	1.79	3.35	0.01
FM	3.02	2.64	2.70	1.96	0.68	NS
m	0.32	0.95	0.16	0.46	1.14	NS
k	0.20	0.63	0.06	0.32	1.40	NS
K	0.14	0.35	0.12	0.33	0.20	NS
FK	0.22	0.67	0.10	0.30	1.20	NS
F	13.96	6.38	13.84	6.66	0.90	NS
Fc	2.20	2.09	1.20	1.25	2.86	0.01
C'	0.66	0.93	0.68	0.93	0.12	NS
FC	2.40	2.05	1.92	2.12	1.14	NS
CF	0.24	0.47	0.14	0.40	1.00	NS
H	3.40	2.83	1.58	2.15	3.57	0.01
Hd	1.26	1.92	0.40	0.92	2.87	0.01
A	7.80	4.75	7.80	4.59	0.00	NS
Ad	1.40	1.59	0.90	1.59	1.56	NS
At	2.32	2.10	4.40	3.69	3.41	0.01
Obj	3.76	3.60	2.72	2.53	1.68	NS
Pl	1.56	1.55	1.54	1.79	0.06	NS
N	2.00	2.98	0.92	1.21	2.30	0.05
Geog	0.78	1.15	0.26	0.79	2.60	0.05
Art & Des.	0.58	1.20	0.52	0.96	0.27	NS
Arch.	0.26	0.56	0.44	0.75	1.28	NS

Comparison of Eng. Stu. and Stu. Teachers on Rorschach Components

Rorschach Components	Eng. Stu.		Stu. Tea.		t	P
	Mean	S.D.	Mean	S.D.		
W	8.66	7.05	8.06	5.74	0.46	NS
D	12.78	7.33	15.00	8.08	1.42	NS
d	3.02	3.58	3·30	4.48	0.34	NS
Dd	0.78	2.26	2.20	3.29	2.53	0.05
S	0.84	1.25	1.72	1.99	2.67	0.01
M	2.68	2.22	2.46	2.36	0.48	NS
FM	3.02	2.64	4.14	2.97	2.00	0.05
m	0.32	0.95	0.22	0.57	0.71	NS
k	0.20	0.63	0.06	0.24	1.40	NS
K	0.14	0.35	0.28	0.66	1.40	NS
FK	0.22	0.67	0.26	0.56	0.40	NS
F	13.96	6.38	16.96	10.21	1.74	NS
Fc	2.20	2.09	1.54	1.69	1.69	NS
C'	0.66	0.93	0.72	1.10	0.30	NS
FC	2.40	2.05	3.36	2.52	2.09	0.05
CF	0.24	0.47	0.24	0.15	0.00	NS
H	3.40	2.83	3.84	4.23	0.60	NS
Hd	1.26	1.92	1.00	1.37	0.79	NS
A	7.80	4.75	9.36	4.28	1.71	NS
Ad	1.40	1.59	1.82	2.13	1.13	NS
At	2.32	2.10	2.32	1.88	0.00	NS
Obj	3.76	3.60	2.86	2.41	1.45	NS
Pl	1.56	1.55	2.48	2.18	2.49	0.05
N	2.00	2.98	2.00	1.86	0.00	NS
Geog	0.78	1.15	1.36	2.07	1.76	NS
Art & Des.	0.58	1.20	0.74	1.09	0.73	NS
Arch.	0.26	0.56	1.22	1.34	4.80	0.01

Comparison of Law and Medical Students on Rorschach Components

Rorschach Components	Law Stu.		Med. Stu.		t	P
	Mean	S.D.	Mean	S.D.		
W	10.28	6.16	7.96	4.50	2.13	0.05
D	11.50	7.67	10.92	5.79	0.42	NS
d	1.38	3.57	2.38	3.22	1.47	NS
Dd	0.80	1.57	0.48	1.59	1.00	NS
S	0.56	1.08	0.54	1.06	0.09	NS
M	2.02	2.56	1.34	1.79	1.51	NS
FM	4.02	3.72	2.70	1·96	2.20	0.05
m	0.14	0.35	0.16	0.46	0.20	NS
k	0.08	0.33	0.06	0.32	0.20	NS
K	0.18	0.43	0.12	0.33	0.60	NS
FK	0.06	0.24	0.10	0.30	0.40	NS
F	14.20	8.77	13.84	6.66	0.23	NS
Fc	0.74	0.91	1.20	1.25	2.09	0.05
C'	0.54	0.90	0.68	0.93	0.82	NS
FC	2.36	1.96	1.92	2.12	1.07	NS
CF	0.18	0.38	0.14	0.40	1.40	NS
H	3.32	3.50	1.58	2.15	3.00	0.01
Hd	0.34	0.74	0.40	0.92	0.35	NS
A	7.28	4.49	7.80	4.39	0.58	NS
Ad	1.10	2.05	0.90	1.59	0.54	NS
At	2.44	2.68	4.40	3.69	3.01	0.01
Obj	2.96	3.06	2.72	2.53	0.43	NS
Pl	1.94	1.88	1.54	1.79	1.08	NS
N	1.58	1.72	0.92	1.21	2.20	0.05
Geog	0.90	1.28	0.26	0.79	2.91	0.01
Art	0.88	1.32	0.52	0.96	1.64	NS
Arch.	0.64	0.99	0.44	0.75	1.18	NS

Comparison of Law Students and Student-Teachers on Rorschach Components

Rorschach Components	Law Stu.		Stu. Tea.		t	P
	Mean	S.D.	Mean	S.D.		
W	10.28	6.16	8.66	5.74	1.85	NS
D	11.50	7.67	15.00	8.08	2.20	0.05
d	1.38	3.57	3.30	4.48	2.34	0.05
Dd	0.80	1.57	2.20	3.29	2.69	0.01
S	0.56	1.08	1.72	1.99	3.62	0.01
M	2.02	2.56	2.46	2.36	0.88	NS
FM	4.02	3.72	4.14	2.97	0.18	NS
m	0.14	0.35	0.22	0.57	0.80	NS
k	0.08	0.33	0.06	0.24	0.20	NS
K	0.18	0.43	0.28	0.66	1.00	NS
FK	0.06	0.24	0.26	0.56	2.00	0.05
F	14.20	8.77	16.96	10.21	1.44	NS
Fc	0.74	0.91	1.54	1.69	3.08	0.01
C'	0.54	0.90	0.72	1.10	0.90	NS
FC	2.36	1.96	3.36	2.52	2.17	0.05
CF	0.18	0.38	0.24	0.51	0.60	NS
H	3.32	3.50	3.84	4.23	0.67	NS
Hd	0.34	0.74	1.00	1.37	3.00	0.01
A	7.28	4.49	9.36	4.28	2.36	0.05
Ad	1.10	2.05	1.82	2.13	1.71	NS
At	2.44	2.68	2.32	1.88	0.25	NS
Obj	2.96	3.06	2.86	2.41	0.18	NS
Pl	1.94	1.88	2.48	2.18	1.32	NS
N	1.58	1.72	2.00	1.86	1.17	NS
Geog	0.90	1.28	1.36	2.07	1.31	NS
Art	0.88	1.32	0.74	1.09	0.58	NS
Arch.	0.64	0.99	1.22	1.34	2.42	0.05

Comparison of Med. Stu. and Stu. Tea. on Rorschach Components

Rorschach Components	Med. Stu.		Stu. Tea.		t	P
	Mean	S.D.	Mean	S.D.		
W	7.96	4.50	0.06	5.74	0.10	NS
D	10.92	5.79	15.00	8.08	2.87	0.01
d	2.38	3.22	3.30	4.48	1.16	NS
Dd	0.48	1.59	2.20	3.29	3.31	0.01
S	0.54	1.06	1.72	1.99	3.69	0.01
M	1.34	1.79	2.46	2.36	2.67	0.01
FM	2.70	1.96	4.14	2.97	2.82	0.01
m	0.16	0.46	0.22	0.57	0.60	NS
k	0.06	0.32	0.06	0.24	0.00	NS
K	0.12	0.33	0.28	0.66	1.60	NS
FK	0.10	0.30	0.26	0.56	1.60	NS
F	13.84	6.66	16.96	10.21	1.79	NS
Fc	1.20	1.25	1.54	1.69	1.14	NS
C'	0.68	0.93	0.72	1.10	0.20	NS
FC	1.92	2.12	3.36	2.52	3.06	0.01
CF	0.14	0.40	0.24	0.51	1.00	NS
H	1.58	2.15	3.84	4.23	3.32	0.01
Hd	0.40	0.92	1.00	1.37	2.50	0.05
A	7.80	4.39	9.36	4.28	1.77	NS
Ad	0.90	1.59	1.82	2.13	2.49	0.05
At	4.40	3.69	2.32	1.88	3.52	0.01
Obj	2.72	2.53	2.86	2.41	0.28	NS
Pl	1.54	1.79	2.48	2.18	2.35	0.50
N	0.92	1.21	2.00	1.86	3.37	0.01
Geog	0.26	0.79	1.36	2.07	3.44	0.01
Art	0.52	0.96	0.74	1.09	1.10	NS
Arch.	0.44	0.75	1.22	1.34	3.54	0.01

APPENDIX D

Description of the TAT pictures used in this study.

1. A young boy is contemplating a violin which rests on a table in front of him.

2. Country scene; in the foreground is a young woman with books in her hand; in the background a man is working in the fields and an older woman is looking on.

3BM On the floor against a couch is the huddled form of a boy with his head bowed on his right arm. Beside him on the floor is a revolver.

6BM A short elderly woman stands with her back turned to a tall youngman. The latter is looking downward with a perplexed expression.

13MF A young man is standing with downcast head buried in his arm. Behind him is the figure of a woman lying in bed.

7BM A grey-haired man is looking at a younger man who is sullenly staring into space.

8BM An adolescent boy looks straight out of the picture. The barrel of a rifle is visible at one side, and in the background is the dim scene of a surgical operation, like a reverie-image.

4. A woman is clutching the shoulders of a man whose face and body are averted as if he were trying to pull away from her.

17BM A naked man is clinging to a rope. He is in the act of climbing up or down.

16. Blank Card.

Definition of Needs used in this Investigation

1. Achievement

Desires and Effects: To accomplish something difficult. To master, manipulate or organize physical objects, human beings, or ideas. To do this as rapidly, and as independently as possible. To overcome obstacles and attain a high standard. To excel one's self. To rival and surpass others. To increase self regard by the successful exercise of talent.

2. Deference

To admire and support a superior O. To praise, honour, or euologize. To yield eagerly to the influence of an allied O. To emulate an exemplar. To conform to custom.

3. Abasement

To submit passively to external force. To accept injury, blame, criticism, punishment. To surrender. To become resigned to fate. To admit inferiority, error, wrong doing or defeat. To confess and atone. To blame, belittle or mutilate the self. To seek and enjoy pain, punishment, illness and misfortune.

4. Autonomy

To get free, shake off restraint, break out of confinement. To resist coercion and restriction. To avoid or quit activities prescribed by domineering authorities. To be independent and free to act according to impulse. To be unattached, unconditioned, irresponsible. To defy conventions.

5. Aggression

To overcome opposition forcefully. To fight. To revenge an injury. To attack, injure or kill an O. To oppose forcefully or punish an O. (Physical). To belittle, censure, curse or redicule maliciously an O. To depreciate and slander (verbal).

6. Dominance

To control one's human environment. To influence or direct the behaviour of Os by suggestion, seduction, persuation, or command. To dissuade, restrain or prohibit. To induce an O to act in a way which accords with one's sentiments and needs. To get Os to co-operate. To convince an O of the 'rightness' of one's opinion.

7. Nurturance

To give sympathy and gratify the needs of a helpless O; an infant or any O that is weak, disabled, tired, inexperienced, infirm, defeated, humiliated, lonely, dejected, sick, mentally confused. To assist an O in danger. To feed, help, support, console, protect, comfort, nurse, heal.

8. **Succorance**

To have one's needs gratified by the sympathetic aid of an allied O. To be nursed, supported, sustained, surrounded, protected, loved, advised, guided, indulged, forgiven, consoled. To remain close to a devoted protector. To have always a supporter.

9. **Affiliation**

To draw near and enjoyably cooperate or reciprocate with an allied O: an O who resembles the S or who likes the S. To please and win affection of a cathected O. To adhere to remain loyal and a friend.

10. **Counteraction**

To master or make up for a failure by restiving. To obliterate an humiliation by resumed action. To overcome weaknessэs, to repress fear. To efface a dishonour by action. To search for obstacles and difficulties to overcome. To maintain self-respect and pride on a high level.

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